FAULT TREE FT-101 Rx

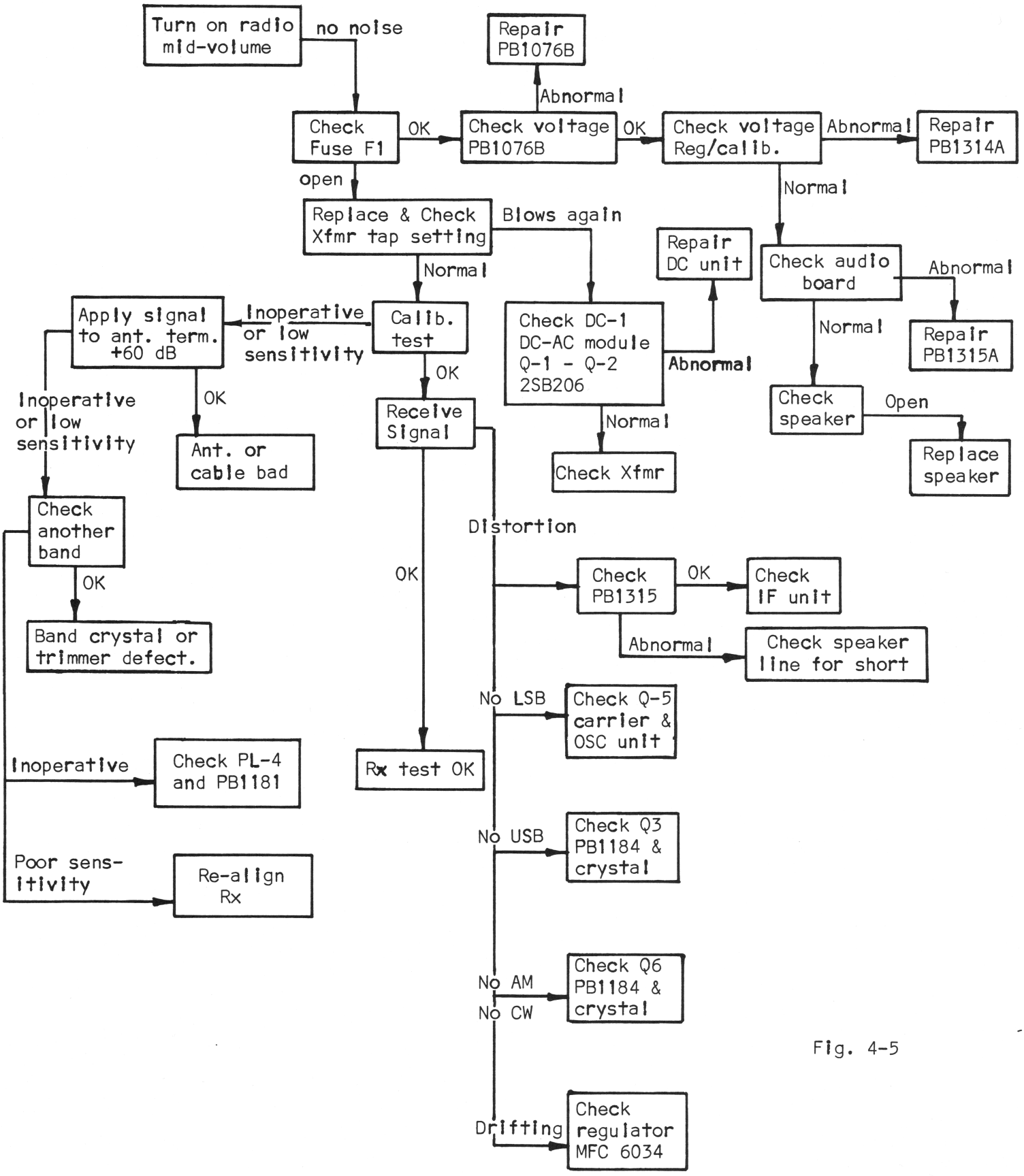

Fig. 4-5

FAULT TREE - FT-101 Tx

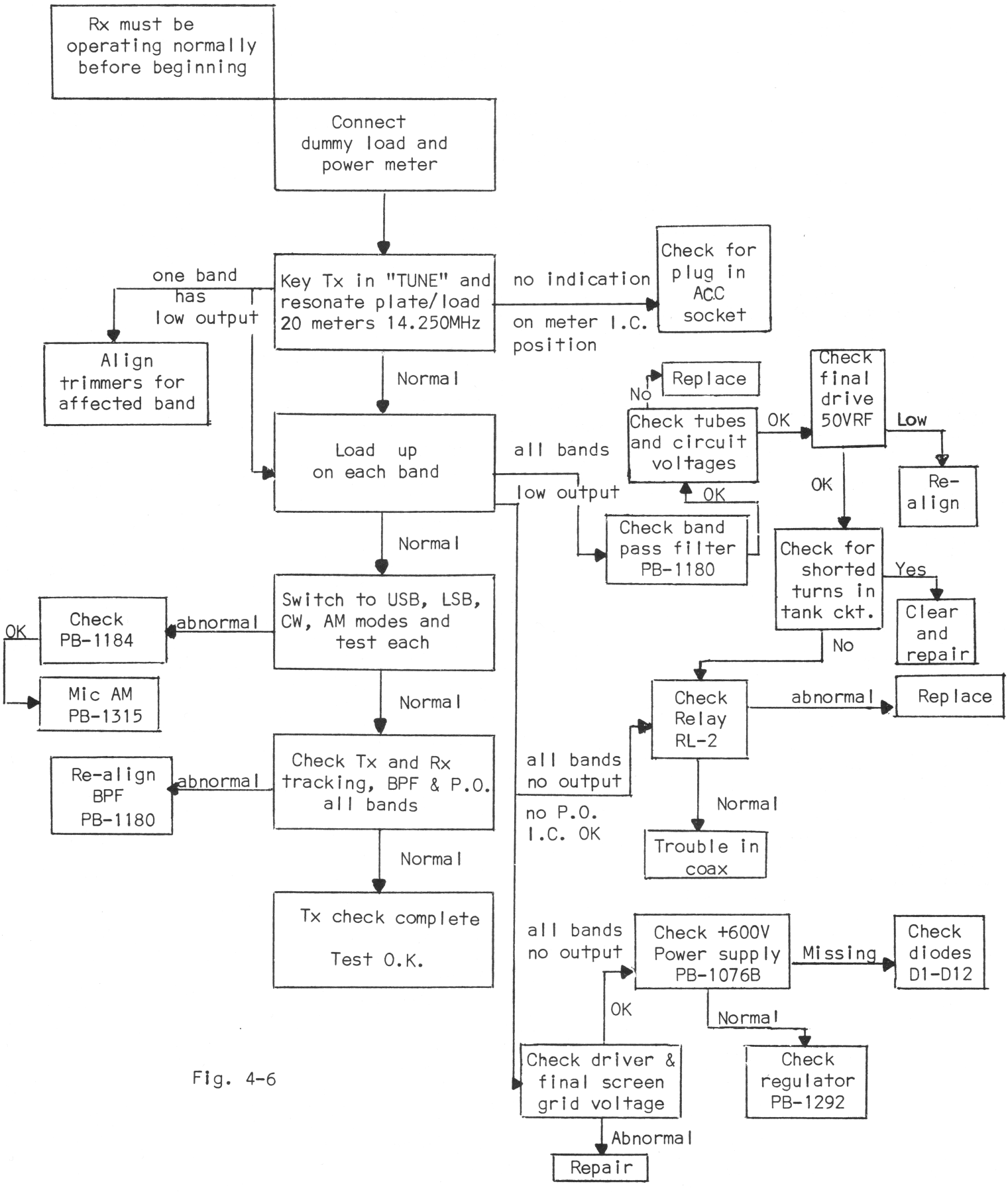

Fig. 4-6

FT-101

VOLTAGE CHART

	D.C. VOLTAGE											
MJ / PIN	1		2		3		4		5		6	
	R	T	R	T	R	T	R	T	R	T	R	T
1	E	E	E	E	E	E	E	E	E	E	E	E
2	E	E	E	E	0	0	E	E	0	0	-70	-55
3	6.0	6.0	0	0	13.0	12.5	0	0	0.7	0.7	-18	0
4	0.5	0.5	E	E	0	0	0	0	8.5	8.5	-20	-3.5
5	5.5	5.5	8.5	8.5	0	0	0	0	6.0	6.0	-150	-140
6	6.0	6.0	E	E	0	0	E	E	0	0	170	170
7	E	E	13.0	12.5	E	E	0	0	E	E	2.7	2.7
8	0	0	E	E	0	11.5	0	0	0	0	0.6	2.7
9	8.0	13.0	12.0	0	9.0	9.0	9.0	9.0	0	0	12.5	0
10	0	11.5	E	E	6.5	0.35	1.5	1.5	13.0	12.5	0	11.5
11	13.0	12.5	0	0	13.0	12.5	E	E	0	0	2.5	2.5
12	12.5	0	E	E	0.7	0.7	11.0	10.5	6.6	0.3	13.5	13.0
13	12.0	0	0	11.5	8.0	13.0	0	0	12.5	0	6.0	6.0
14	13.0	12.5	E	E	E	E	6.0	6.0	12.5	0.3	13.0	12.5
15	0	0	13.0	12.5	0	0	13.0	12.5	—	—	0	0
16	0	11.5	13.0	12.5	3.0	3.0	13.0	12.5	—	—	0	0
17	13.0	12.5	E	E	0	0	0	0	—	—	0	0
18	E	E	E	E	0	0	E	E	—	—	E	E
19	—	—	—	—	13.0	12.5	E	E	—	—	—	—
20	—	—	—	—	12.5	0	E	E	—	—	—	—
21	—	—	—	—	6.0	6.0	E	E	—	—	—	—
22	—	—	—	—	E	E	0	0	—	—	—	—

VALUES ARE IN VOLTS D.C.
R:RECEIVE, T:TRANSMIT

	R.F. VOLTAGE											
	1		2		3		4		5		6	
	R	T	R	T	R	T	R	T	R	T	R	T
1	E	E	E	E	E	E	E	E	E	E	E	E
2	E	E	E	E	—	—	E	E	—	—	—	—
3	3	3	3180 79DB		—	—	—	—	—	—	—	—
4	2	2	E	E	—	—	—	—	—	—	—	—
5	—	—	—	0.01	0.6	0	—	—	—	—	—	—
6	—	—	E	E	—	—	E	E	1	1	—	—
7	E	E	—	—	E	E	—	—	E	E	—	—
8	14250 46DB	—	E	E	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—
10	—	—	E	E	3180 70DB	0.01	—	—	—	—	—	—
11	14250 46DB	2	0.08	0.08	—	—	E	E	—	—	—	—
12	—	—	E	E	—	—	—	—	—	0.06	—	—
13	—	0.1	—	—	—	—	—	—	—	—	—	—
14	—	—	E	E	E	E	—	—	—	—	—	—
15	0.3	0.3	5720 66DB	0.4	3180 78DB	0.06	—	—	—	—	—	—
16	—	—	5720 56DB	0.1	—	—	—	—	—	—	—	—
17	5720 66DB	0.4	E	E	3180 73DB	0.03	—	—	—	—	—	—
18	E	E	E	E	—	—	E	E	—	—	E	E
19	—	—	—	—	—	—	E	E	—	—	—	—
20	—	—	—	—	—	—	E	E	—	—	—	—
21	—	—	—	—	—	—	E	E	—	—	—	—
22	—	—	—	—	E	E	—	—	—	—	—	—

MODE: USB, BAND: 20M, R:RECEIVE, T:TRANSMIT
VALUES WITHOUT ANY UNIT ARE IN VOLTS R.M.S.
VALUES WITH DB ARE SIGNAL GENERATOR OUTPUT LEVELS TO PRODUCE S-9.
VALUES GIVEN UNDER THE COLUMN T ARE SIGNAL LEVELS TO PRODUCE 100W OUTPUT POWER MODULATED BY 1KHz MIC INPUT.

Fig. 4-7

FT-101

RESISTANCE CHART

MJ NO. / PIN NO.	1	2	3	4	5	6
1	E	E	E	E	E	E
2	E	E	150	E	0	10K
3	300	0	10	0		4K
4	3K	E	∞		10K	10K
5	300	10K	350	∞	200	30K
6	200	E	1K	E	5	50K
7	E	10	E	0	E	3K
8	0	E	0	1K	5K	6K
9	3K	200	10K	10K	1K	200
10		E	3K	50K	10	0
11	20	∞	10	E	50K	3K
12	200	E	1K	100	3K	10
13	200	0	3	∞	200	200
14	10	E	E	200	500	10
15	0	100	0	10	—	50K
16	0	100	∞	10	—	0
17	100	E	∞		—	∞
18	E	E	0	E	—	E
19	—	—	10	E	—	—
20	—	—	200	—	—	—
21	—	—	200	—	—	—
22	—	—	E	—	—	—

VALUES ARE IN OHMS.

Fig. 4-8

FT-101-B & FT-101-E/EE/EX

VOLTAGE CHART

MJ / PIN	D.C. VOLTAGE													
	1		2		3		4		5		6		7	
	R	T	R	T	R	T	R	T	R	T	R	T	R	T
1	E	E	E	E	E	E	E	E	E	E	E	E	0	0
2	E	E	E	E	0	0	0	0	0	0	-70	-55	E	E
3	6.0	6.0	0	0	13.0	12.5	0	0	0.7	0.7	-18	0	E	E
4	0.5	0.5	E	E	0	0	0	0	8.5	8.5	-20	-3.5	0	0
5	5.5	5.5	13.0	12.5	0	0	0	0	6.0	6.0	-150	-140	0	13.0
6	6.0	6.0	E	E	0	0	E	E	0	0	170	170	0	0
7	E	E	13.0	12.5	E	E	0	0	E	E	0	0	13.5	12.5
8	0	0	E	E	0	11.5	0	0	0	0	0.6	2.7	1.0	1.0
9	8.0	13.0	12.0	0	9.0	9.0	9.0	9.0	0	0	12.5	0	E	E
10	0	11.5	E	E	6.5	0.35	−18	0	13.0	12.5	0	11.5	E	E
11	13.0	12.5	0	0	13.0	12.5	E	E	0	0	3.5	3.5	—	—
12	12.5	0	E	E	0.7	0.7	9.0	9.0	6.6	0.3	13.5	13.0	—	—
13	12.0	0	0	11.5	8.0	13.0	0	0	12.5	0	6.0	6.0	—	—
14	13.0	12.5	E	E	E	E	6.0	6.0	12.5	0.3	13.0	12.5	—	—
15	0	0	13.0	12.5	0	0	13.0	12.5	—	—	0	0	—	—
16	0	11.5	13.0	0	0	0	13.0	12.5	—	—	0	0	—	—
17	13.0	12.5	E	E	0	0	0	0	—	—	0	0	—	—
18	E	E	E	E	0	0	E	E	—	—	E	E	—	—
19	—	—	—	—	13.0	12.5	0	0	—	—	—	—	—	—
20	—	—	—	—	0	0	E	E	—	—	—	—	—	—
21	—	—	—	—	0	0	E	E	—	—	—	—	—	—
22	—	—	—	—	E	E	0	0	—	—	—	—	—	—

VALUES ARE IN VOLTS D.C.
R: RECEIVE, T: TRANSMIT

MJ / PIN	R.F. VOLTAGE													
	1		2		3		4		5		6		7	
	R	T	R	T	R	T	R	T	R	T	R	T	R	T
1	E	E	E	E	E	E	E	E	E	E	E	E	3180KHz 88dB	—
2	E	E	E	E	—	—	—	—	—	—	—	—	E	E
3	* 3	* 3	3180KHz 77dB	0	—	—	—	—	—	—	—	—	E	E
4	* 2	* 2	E	E	—	—	—	—	—	—	—	—	3180KHz 77dB	—
5	—	—	—	0.03	0.08	0	—	—	—	—	—	—	—	—
6	—	—	E	E	—	—	E	E	0.8	0.8	—	—	—	—
7	E	E	—	—	E	E	—	—	E	E	—	—	—	—
8	14MHz 48dB	—	E	E	—	—	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—	E	E
10	—	—	E	E	3180kHz 80dB	0.01	—	—	—	—	—	—	E	E
11	14MHz 60dB	2	0.12	0.12	—	—	E	E	—	—	—	—	—	—
12	—	—	E	E	—	—	—	—	—	0.5	—	—	—	—
13	—	0.15	—	—	—	—	—	—	—	—	—	—	—	—
14	—	—	—	E	E	E	—	—	—	—	—	—	—	—
15	—	—	5720KHz 55dB	0.5	3180KHz 94dB	0.06	—	—	—	—	—	—	—	—
16	—	—	5720KHz 73dB	0.15	—	—	—	—	—	—	—	—	—	—
17	5720KHz 55dB	0.5	E	E	3180KHz 83dB	0.15	—	—	—	—	—	—	—	—
18	E	E	E	E	—	—	E	E	—	—	E	E	—	—
19	—	—	—	—	—	—	E	E	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	E	E	—	—	—	—	—	—	—	—

MODE: USB, BAND: 20M, R: RECEIVE, T: TRANSMIT
VALUES WITHOUT ANY UNIT ARE IN VOLTS R.M.S.
VALUES WITH DB ARE SIGNAL GENERATOR OUTPUT LEVELS TO PRODUCE S-9.
VALUES GIVEN UNDER THE COLUMN T ARE SIGNAL LEVELS TO PRODUCE 100W OUTPUT POWER MODULATED BY 1KHz MIC INPUT.

Fig. 4-9

FT-101-B &
FT-101-E/EE/EX

RESISTANCE CHART

MJ NO. / PIN NO.	1	2	3	4	5	6	7
1	E	E	E	E	E	E	∞
2	E	E	15 0	30K	0	10K	E
3	300	0	10	0	∞	4K	E
4	3K	E	∞	※	10 K	10K	0
5	300	∞	0	∞	200	30K	0
6	200	E	1K	E	5	50K	0
7	E	10	E	0	E	3K	10
8	0	E	0	1K	5K	6K	100K
9	2.5K	12 0	10K	10 K	1K	120	E
10	※	E	3K	50K	10	0	E
11	100	∞	10	E	1M	3K	—
12	120	E	1K	50K	3K	10	—
13	120	0	3K	∞	1.2K	200	—
14	10	E	E	200	700	10	—
15	0	10 0	∞	10	—	50K	—
16	0	10 0	∞	10	—	0	—
17	100	E	∞	※	—	∞	—
18	E	E	∞	∞	—	E	—
19	—	—	10	※	—	—	—
20	—	—	120	E	—	—	—
21	—	—	200	E	—	—	—
22	—	—	E	※	—	—	—

VALUES ARE IN OHMS.

Fig. 4-10

VACUUM TUBE

		1	2	3	4	5	6	7	8	9	10	11	12	P
V 1	R	E	−20	E	AC 12.6	E	AC 6.3	340	260	E	—	—	—	—
	T	E	−3.6	E	AC 12.6	E	AC 6.3	270	220	E	—	—	—	—
V 2	R	AC 12.6	0	160	E	−63	160	0	E	−63	E	160	AC 6.3	650
	T	AC 12.6	0.03	160	E	−50	160	0.03	E	−50	E	160	AC 6.3	570
V 3	R	AC 6.3	0	160	E	−63	E	E	E	−63	E	160	E	650
	T	AC 6.3	0.03	160	E	−50	E	E	E	−50	E	160	E	570

VFO Unit

	E (S)		C (D)		B (G)		
	R	T	R	T	R	T	
Q 1	1.1	1.1	5.7	5.7	0	0	
Q 2	1.1	1.1	5.7	5.7	0	0	
Q 3	1.3	1.3	6	6	1.4	1.4	

High Frequency (RF) Unit (PB-1181B)

	E (S)		C (D)		B (G)		
	R	T	R	T	R	T	
Q 1	2.2	10.5	11	11	1.9 3	1.9 4.5	G 1 G 2
Q 2	1.4	10.5	11.5	11	0	7.5	
Q 3	11.5	0.85	11.5	11	5.5	1.1	
Q 4	1.2	1.2	5	5	0.85	0.85	
Q 5	1	1	5.5	5.5	1.35	1.35	

High Frequency IF (MIX) Unit (PB-1180B)

	E (S)		C (D)		B (G)		
	R	T	R	T	R	T	
Q 1	11.5	1	11.5	11	9.5	1.5	
Q 2	1.05	10.5	10	11.5	0.9 3.6	0.85 3.4	G 1 G 2

NB Unit (PB-1582)

	E (S)		C (D)		B (G)	
	R		R		R	
Q 1	1.35		12		1.9	
Q 2	1.4		12.5			
Q 3	NB:ON 0.95	NB:OFF 0.78	12.6	NB:OFF 12.2		
Q 4	0.7		11.5		G_1 0.4 G_2 1.45	
Q 5	0		11		NB:ON 0.2	
Q 6	0.15		0.11			NB:OFF 0
Q 7	0		NB:ON 5.5	NB:OFF 0.2	0.11	

Fig. 4-11

Low Frequency IF Unit (PB-1183C)

	E (S)		C (D)		B (G)		
	R	T	R	T	R	T	
Q 1	2	2	11.5	11.5	0	0	
Q 2	0.55	11.5	12	11.5	1.15	12	
Q 4	0.35	0	6.5	11	0.5	0	
Q 5	0	0	6.5	11	0.35	0	

IC PIN NO.		1	2	3	4	5	6	7	8
Q 3	R	0.6	2.5	0.4	1.8	7.5	12	6.5	0.6
	T	12	12	12	12	7.5	12	12	12

Modulator Unit (PB-1184A)

	E (S)		C (D)		B (G)		
	R	T	R	T	R	T	
Q 1	11.5	0.9	11	11	8.5	0	
Q 2	10	0.3	11.5	11	4.5	0.65	MODE: CW
Q 3	0.45	0.45	5.5	5.5	0.95	0.95	MODE: USB
Q 4	1.2	1.2	8	8	1.8	1.8	
Q 5	0.45	0.45	5.5	5.5	0.95	0.95	MODE: LSB
Q 6	10	0.45	5.5	5.5	5	0.95	MODE: CW

Audio Unit (PB-1315A)

	E (S)		C (D)		B (G)		
	R	T	R	T	R	T	
Q 1	2.5	2.5	5.5	5.5	0	0	
Q 2	0.6	0.6	3.2	3.2	1.1	1.1	
Q 3	2.7	2.7	9	9	3.3	3.3	
Q 5	0.35	0.35	0.5	0.5	0	0	
Q 6	E	E	11	11	0.5	0.5	S7: VOX
Q 7	0	0	8	8	0.4	0.4	MODE: CW
Q 9	0.65	0.65	3.9	3.9	0.4	0.4	

IC PIN NO.		1	2	3	4	5	6	7
Q 4	R·T	0.7	0.1	2.8	0.1	E	0.6	1.2
Q 8	R·T	5.7	E	7	9.5	5.5	E	5.5

IC PIN NO.		8	9	10	11	12		
Q 4	R·T	3.5	0.7	6	8.2	8.2		
Q 8	R·T	10.5	11.5	—	—	—		

RF Speech Processor Unit (Fix)

	E (S)		C (D)		B (G)		
	R	T	R	T	R	T	
Q 1	0.45	0.45	12.5	11.5	0	0	PROCESS: OFF
	0.45	0.45	12.5	11.5	0	0	PROCESS: ON
Q 3	1.35	1.35	12.5	11.5	0	0	〃 OFF
	1.35	1.35	12.5	11.5	0	0	〃 ON
Q 4	2.3	1.8	12.5	11.5	0	0	〃 OFF
	2.3	2.3	12.5	11.5	0.6	0.6	〃 ON
Q 5	0	0	0	0	0.6	0.6	〃 OFF
	0	0	0	0	0.6	0.6	〃 ON
Q 6	12.0	12.0	12.5	12.5	8.3	8.3	〃 OFF
	1.75	1.75	11.5	11.5	0	0	〃 ON
Q 7	0.44	0.44	5.4	5.4	0	0	S4: CH1 / CH2

IC PIN NO.		1	2	3	4	5	
Q 2	R	12.5	12.5	11.5	12.5	12.5	PROCESS: OFF
	T	11.5	11.5	10.5	11.5	11.5	
	R	12.5	12.5	11.5	12.5	12.5	PROCESS: ON
	T	2.05	2.2	0.7	11	11	

Fig. 4-12

BOARD LOCATIONS - PARTS LOCATIONS

SECTION 5

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BOARD/MODULE COMPLEMENT

FT-101 Version	VFO	REG	HF-IF	LO-IF	AUDIO	RF	MOD	RECT	BLANKER	PROCESS
FT-101 (Early) S/N 25,000 & down	PB1056	PB1079A	PB1084C	PB1080A	PB1081C	PB1077B	PB1078A	PB1076A	*	None
FT-101 (Late) S/N 25,001 & up	PB1056	PB1185	PB1180	PB1183	PB1189	PB1181A	PB1184	PB1076B	PB1182	None
FT-101B (Early) S/N 06000 & down	PB1056	PB1185	PB1180	PB1183B	PB1315	PB1181B	PB1184A	PB1076B	PB1292	None
FT-101B (Late) S/N 06001 & up	PB1056	PB1314A	PB1180B	PB1183B	PB1315A	PB1181B	PB1184A	PB1076B	PB1292	None
FT-101E/EE/EX (Early) S/N 15,000 & down	PB1056	PB1314A	PB1180B	PB1183B	PB1315A	PB1181B	PB1184A	PB1076B	PB1292	PB1494
FT-101E/EE/EX (Mid) S/N 15,001 - 20,500	PB1056	PB1314A	PB1180B	PB1183B	PB1315A	PB1181B	PB1184A	PB1076B	PB1292	PB1534
FT-101E/EE/EX (Late) S/N 20,5001 & up	PB1056	PB1547A	PB1180B	PB1183C	PB1315B	PB1181B	PB1184A	PB1076B	PB1582	PB1534A

* Part of PB-1080A Board

APPROXIMATE BREAK IN POINTS OF PCBA CHANGES

A review of factory records did not disclose the precise serial number break in points, so the following data is the best that could be achieved from old records, and should be used for guidance only.

PB-1160 was used to S/N 023000 (Fixed Oscillator)
-1182 began at S/N 024000

PB-1076 and PB-1076A were used to S/N 021000 (Rectifier Board)
-1076B was used beginning with S/N 022000
The major change was adding more diodes and voltage equalization resistors.

PB-1077A from S/N 508000 to 005000 (RF Amplifier)
-1077B from S/N 006000 to 023000
-1077B (modified) S/N 024000 only
-1181 starts with S/N 025001

PB-1078 used to S/N 024000 (OSC/MOD Board)
-1078A used to S/N 025000
-1184 begins with S/N 025001

PB-1080 and 1080A used in S/N 508000 to 005000 (IF Amplifier)
-1080A (modified) 006000 to 023000
-1080A (modified - modified) 024000 only
-1183 begins with S/N 025001

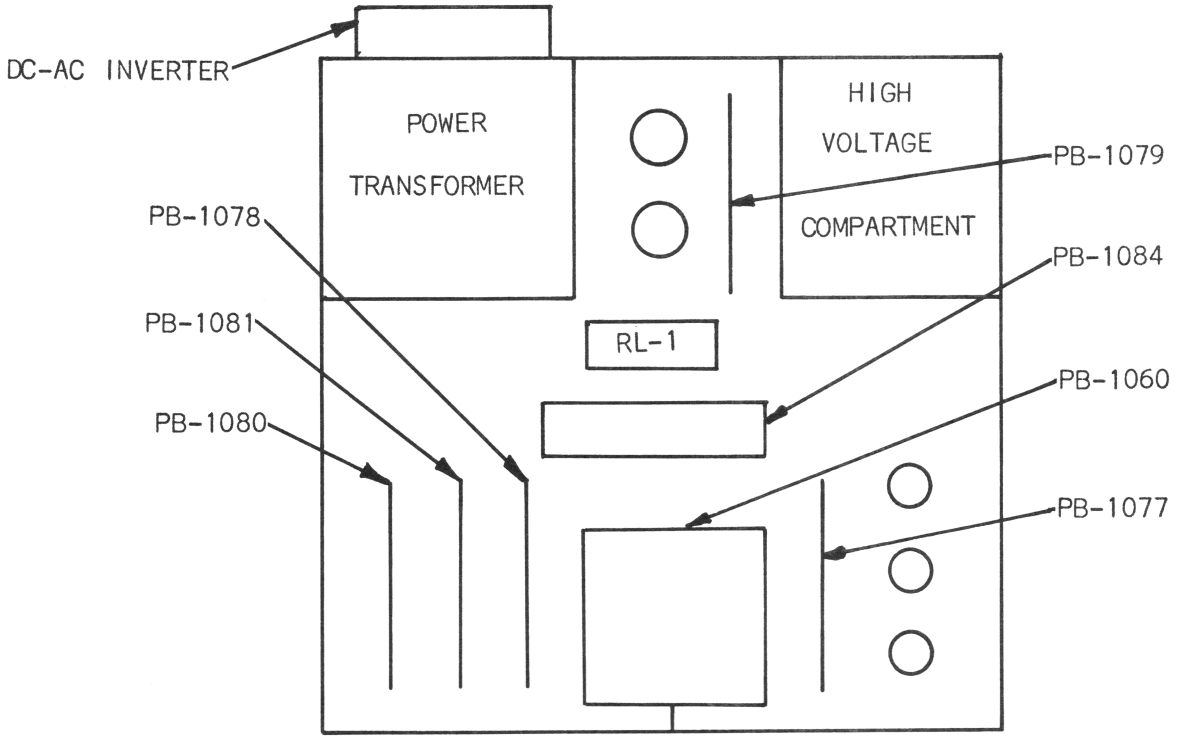
PB-1081, 1081A, 1081B and 1081C to 024000 (Audio Unit)
(STK 401 module first used with PB-1081C)
-1189 begins with S/N 025001

PB-1084 and 1084A used S/N 508000 to 005000 (Mixer)
-1084B and 1084C 006000 to 023000
-1084C (modified) 024000 only
-1180 begins with S/N 025001

PB-1229 begins at S/N 028000 (AF Preamp)

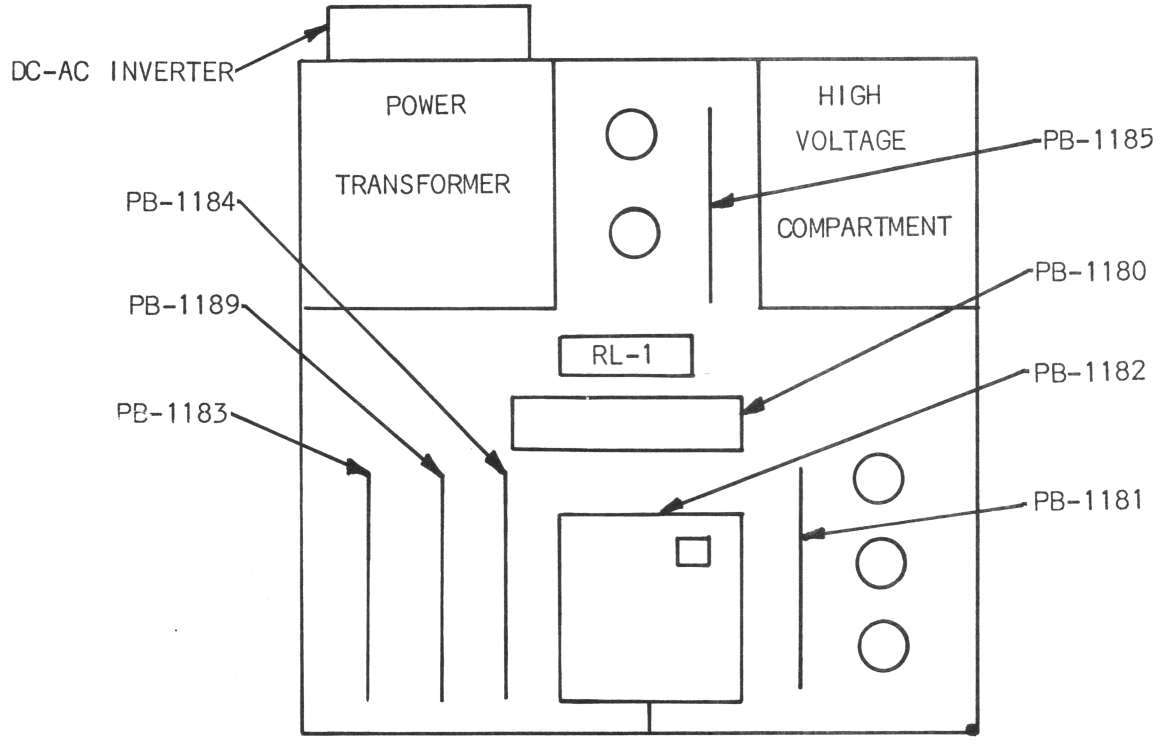
The 508000 serial number was used on some very old sets, quantity unknown, but not more than three thousand (estimated).

BOARD LOCATIONS



FT-101 EARLY

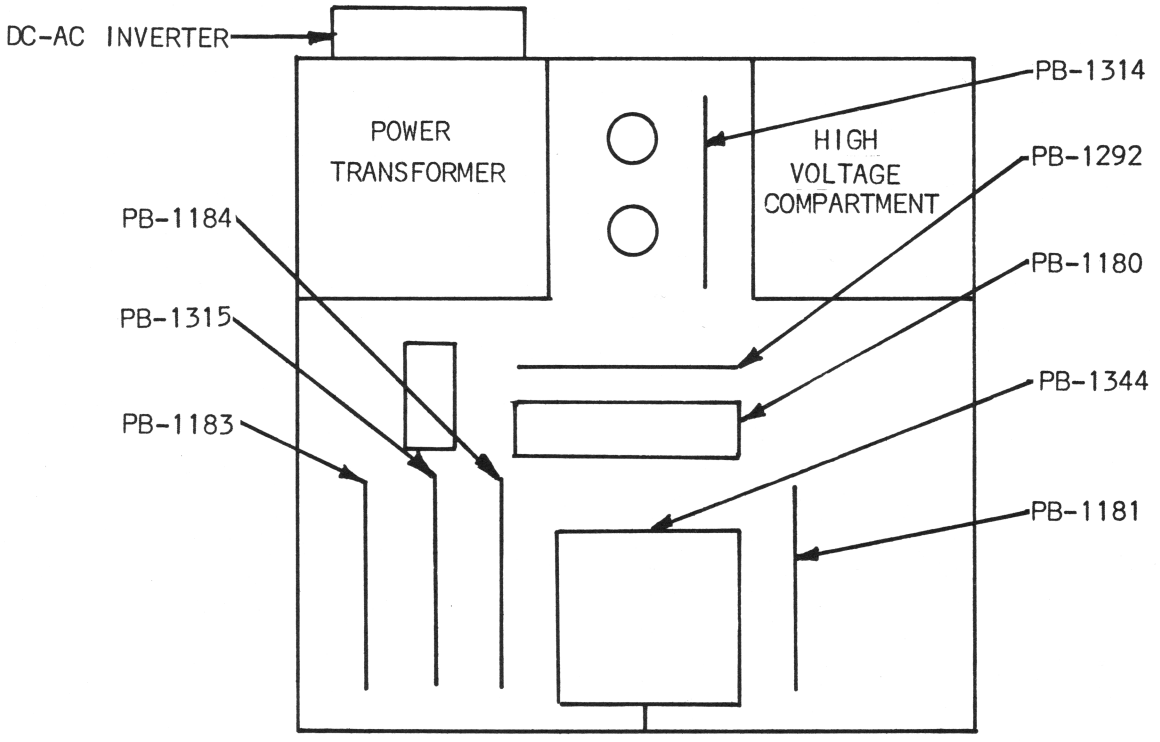
Serial No. 025000 & down



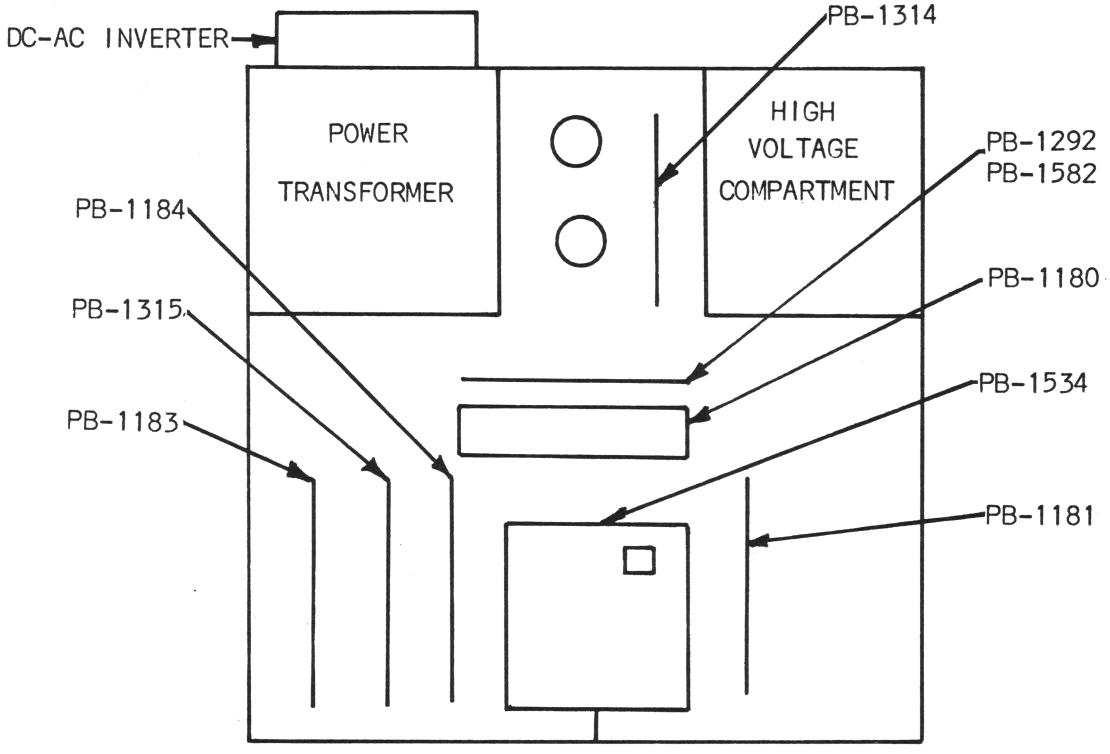
FT-101 LATE

Serial No. 025001 & up

BOARD LOCATIONS

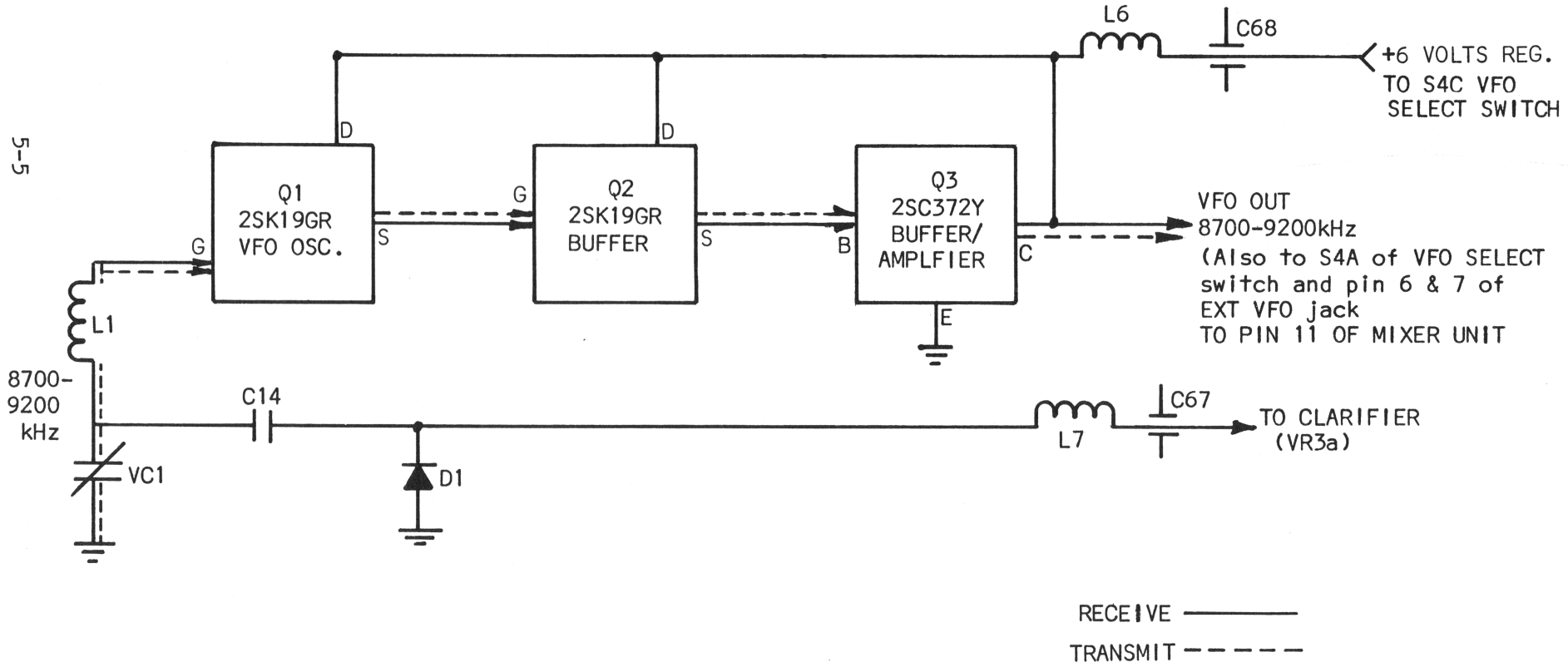


FT-101-B

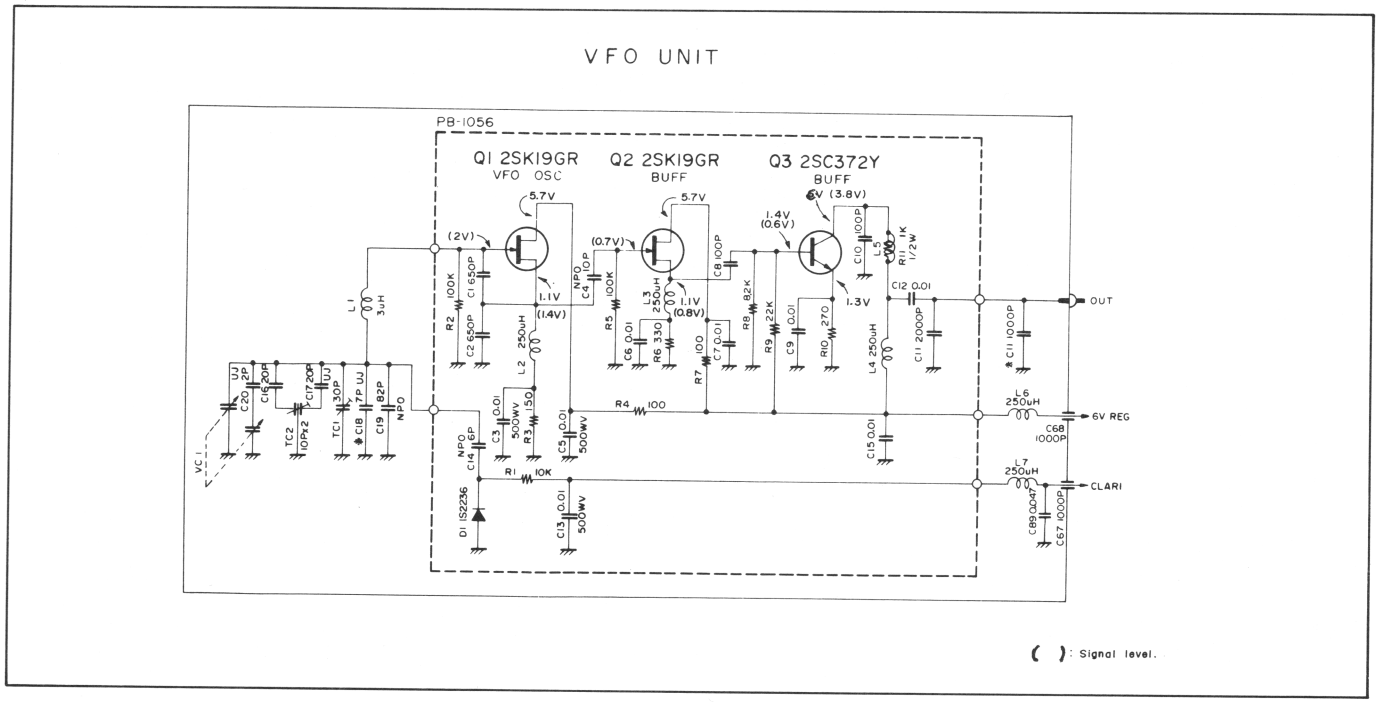


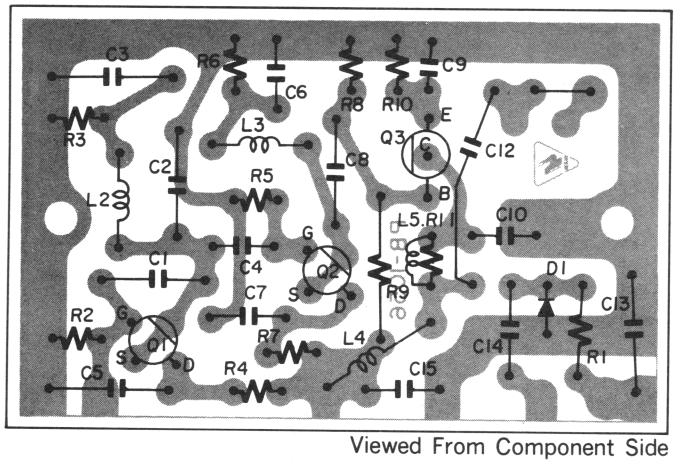
FT-101-E/EE/EX

VFO UNIT
PB-1056
FUNCTIONAL BLOCK DIAGRAM

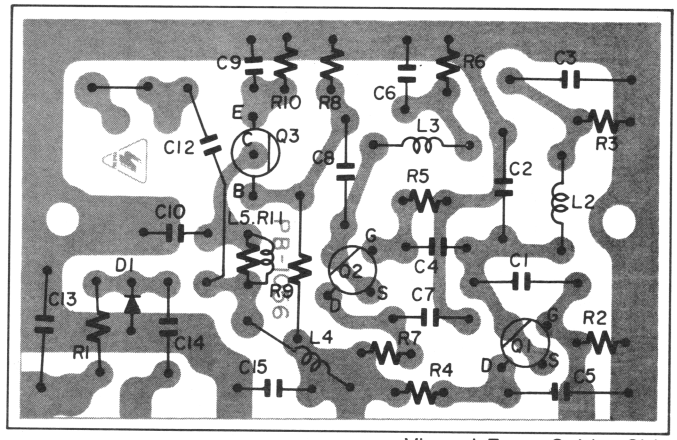


VFO UNIT PB-1056(A~Z)

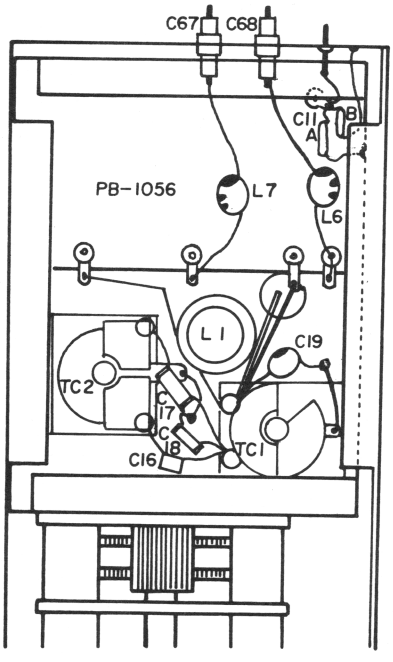


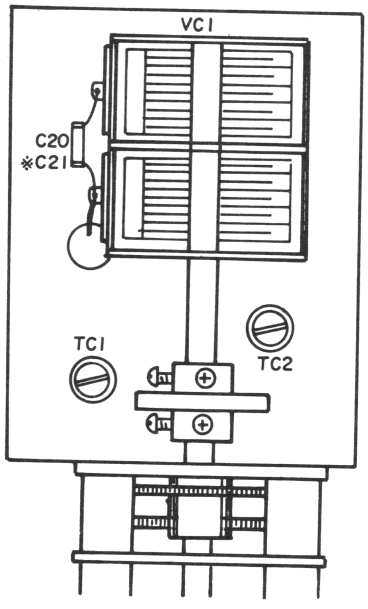


Viewed From Component Side

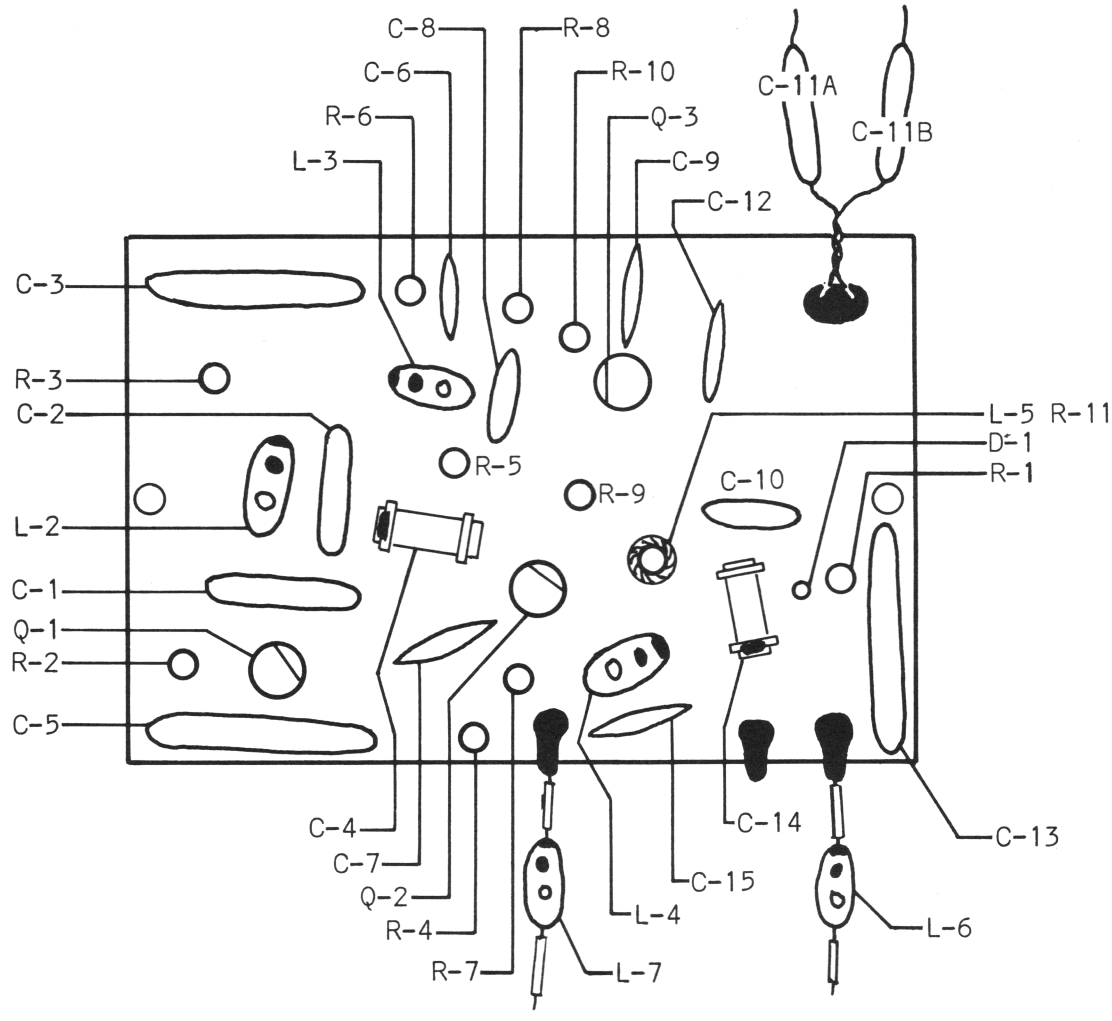


Viewed From Solder Side



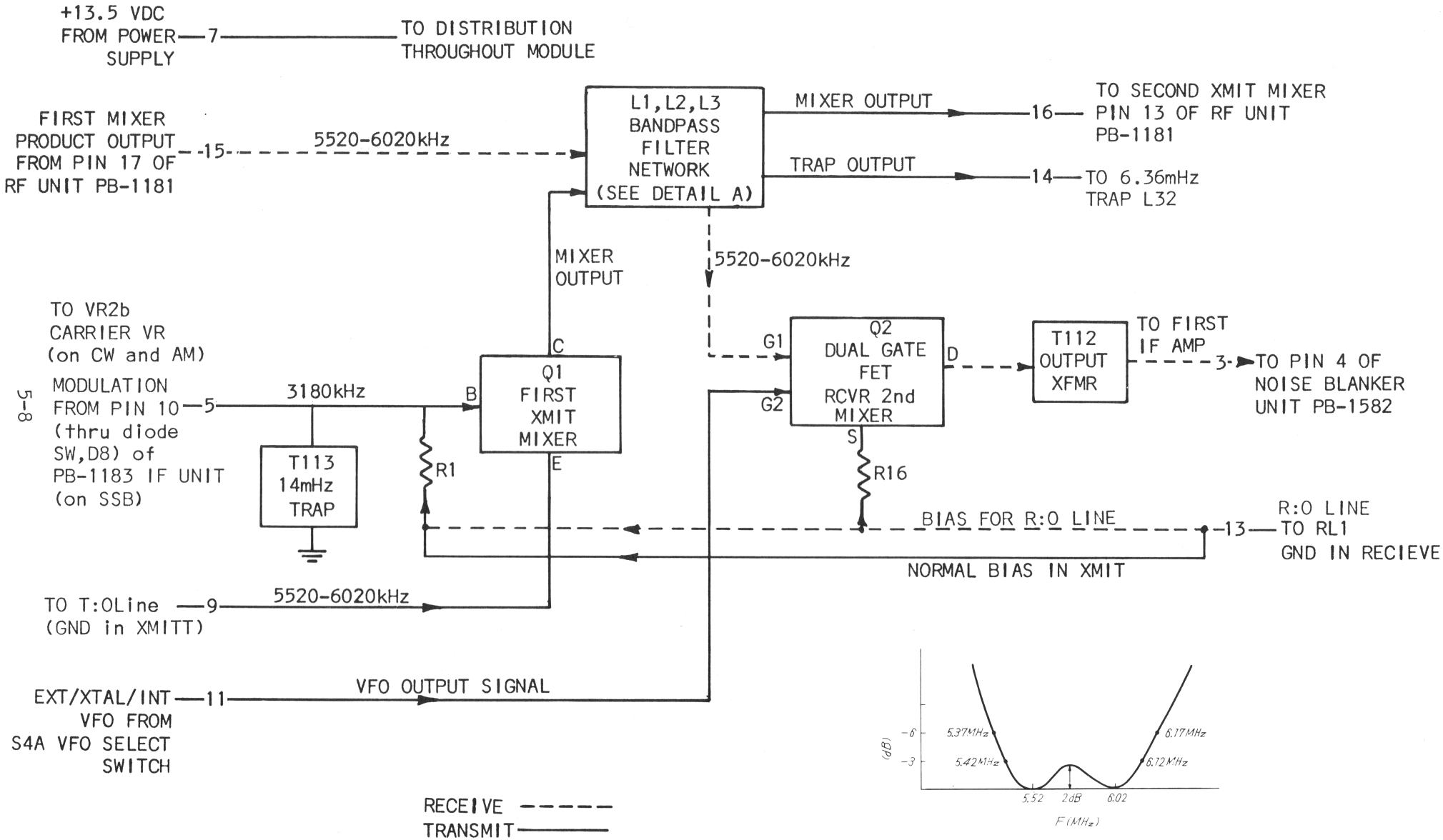


VFO UNIT
PB-1056



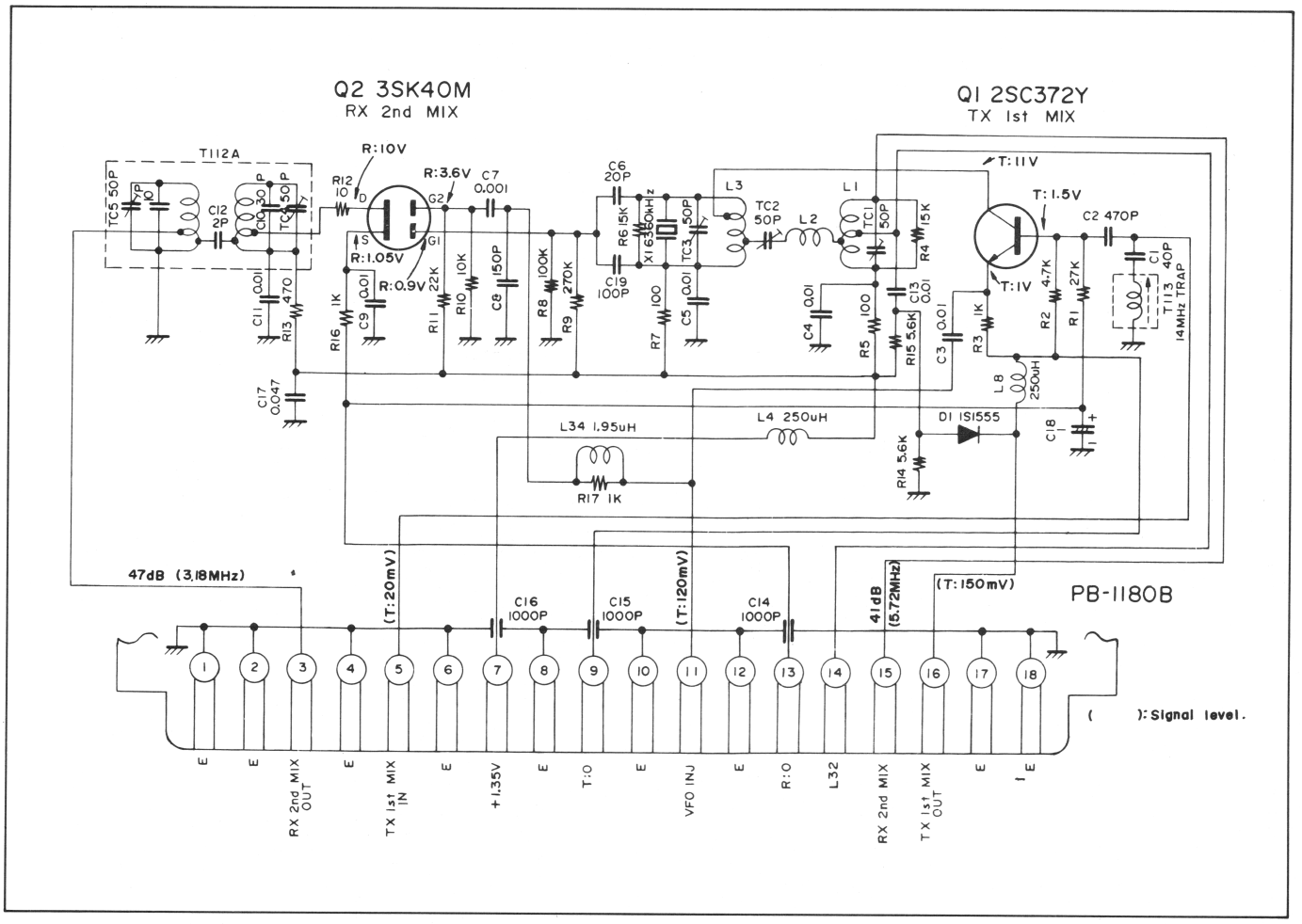
MIXER UNIT PB-1180/1182

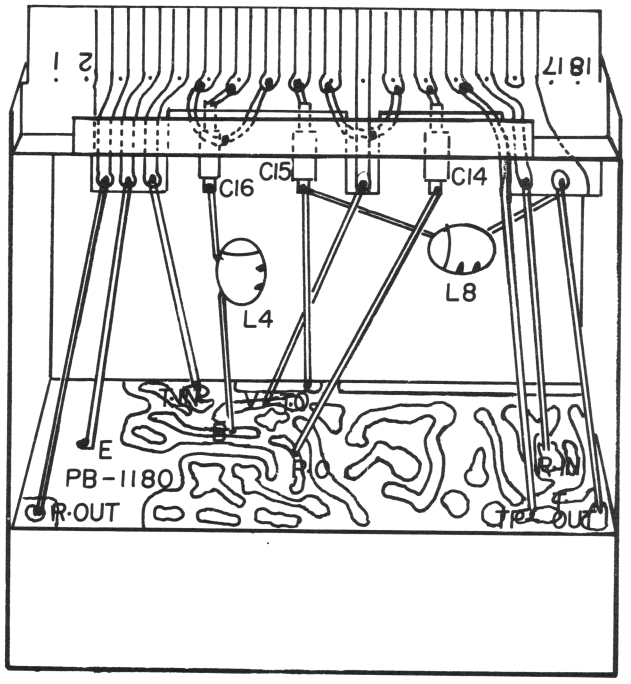
FUNCTIONAL BLOCK DIAGRAM

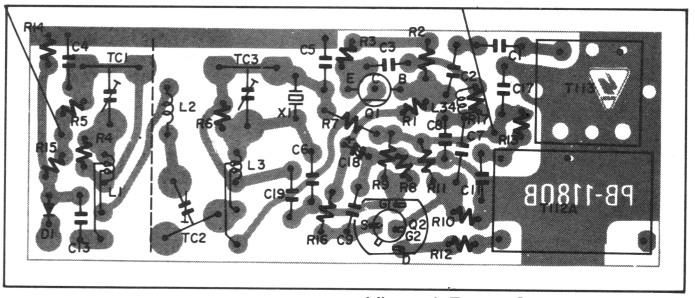


DETAIL "A"
BANDPASS FILTER
NETWORK CHARACTERISTICS

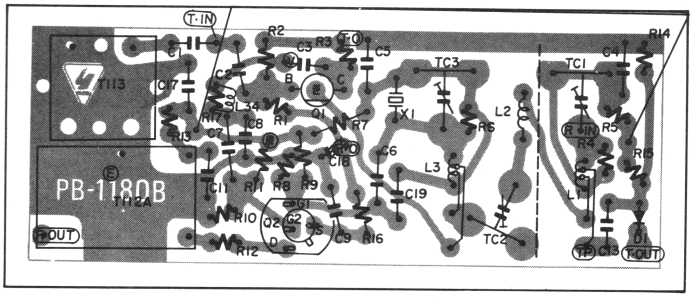
HIGH FREQUENCY IF(MIX)UNIT PB-1180(A~Z)







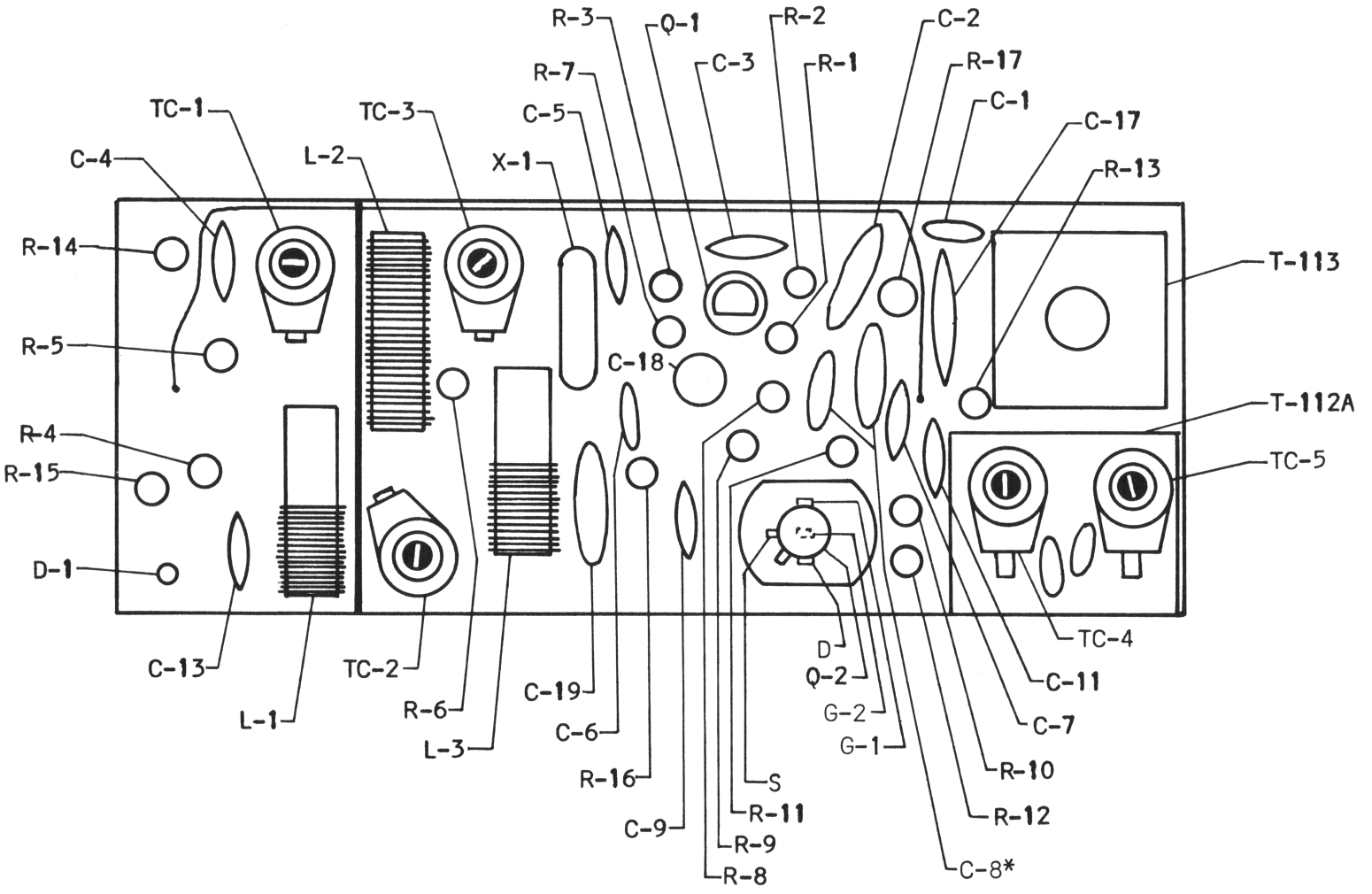
Viewed From Component Side



Viewed From Solder Side

HIGH FREQUENCY IF (MIX) UNIT

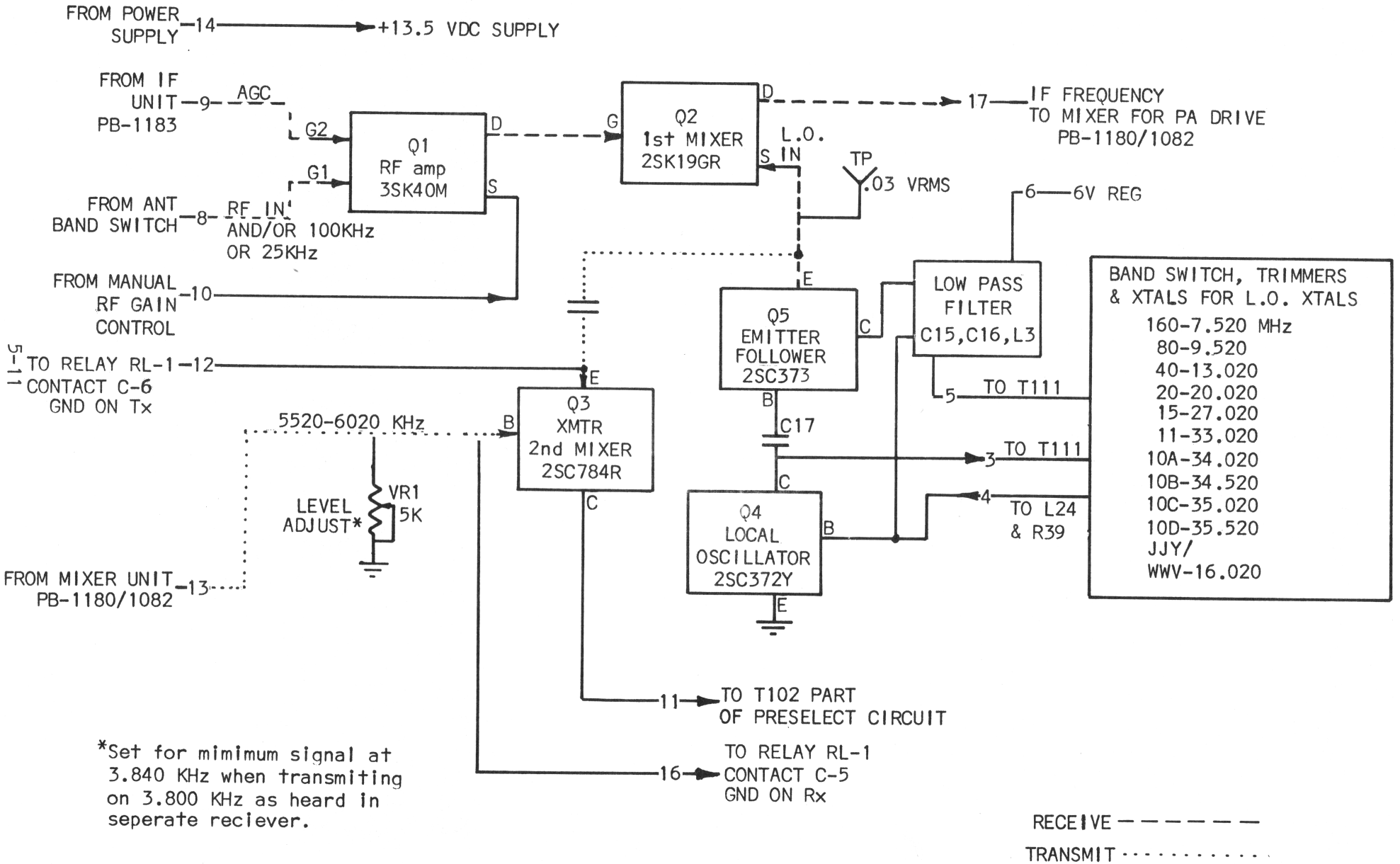
PB - 1180



*Capacitor C-8 is a combination of a 100pf and a 40pf capacitor

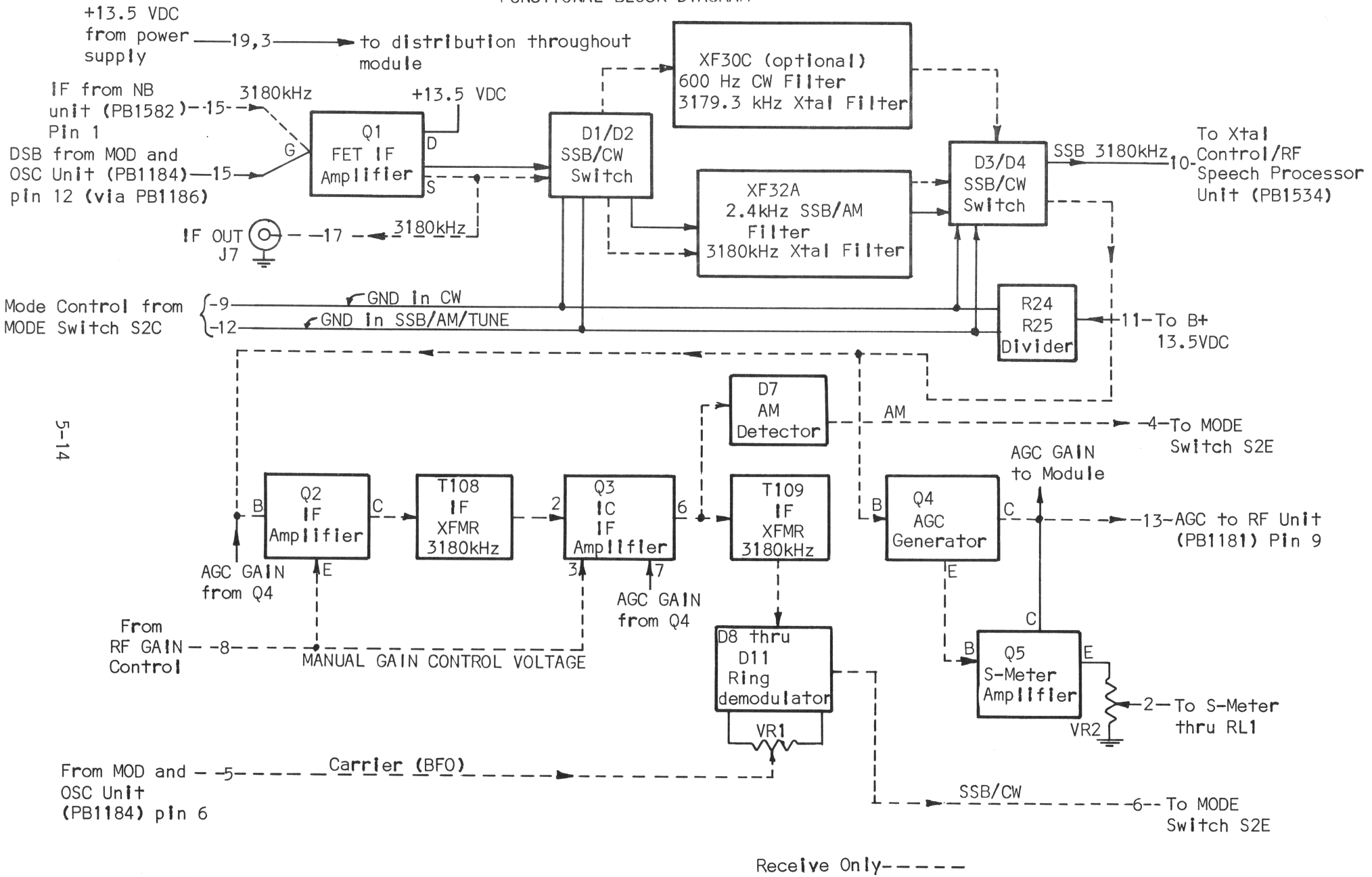
RF UNIT PB-1181

FUNCTIONAL BLOCK DIAGRAM

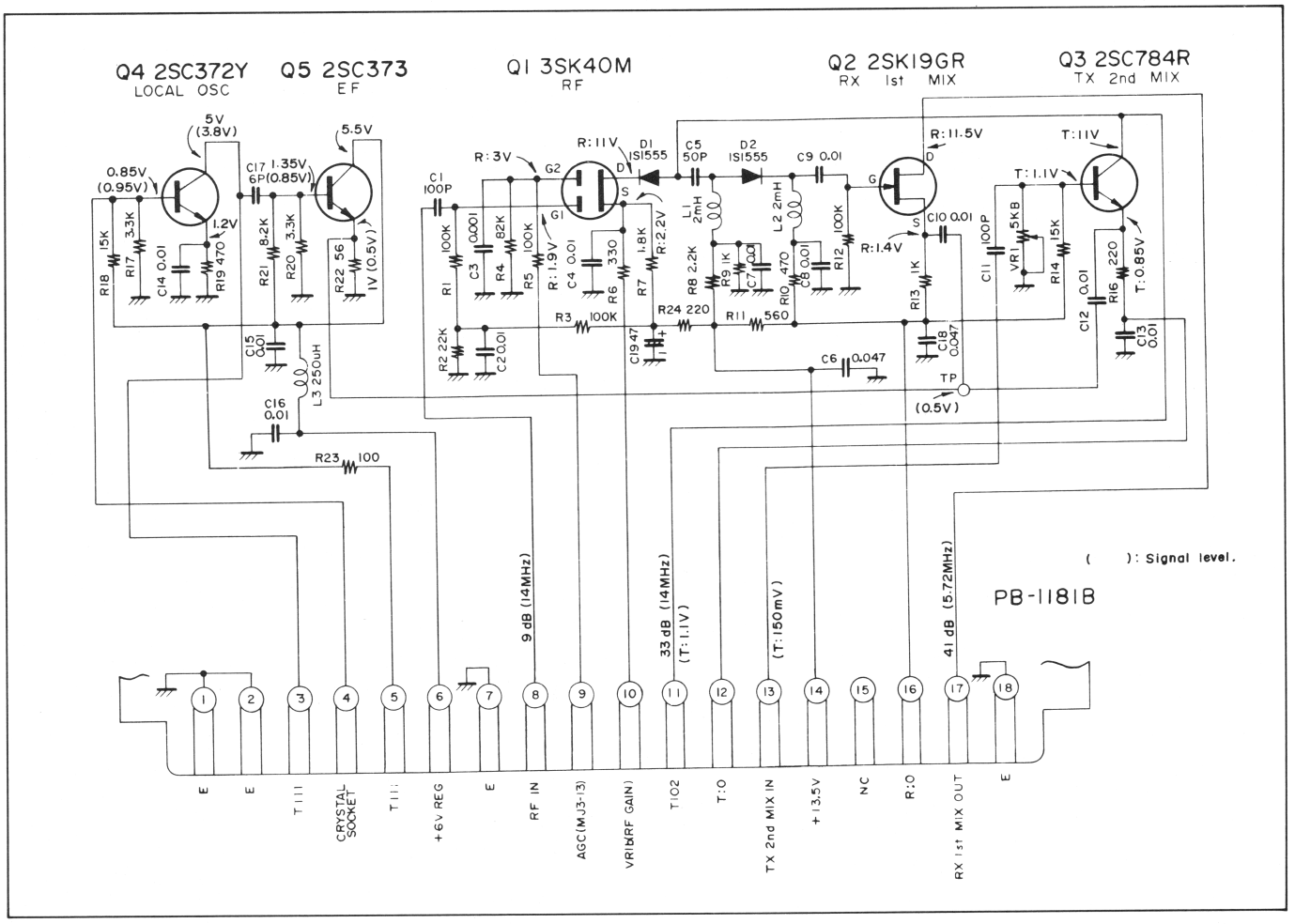


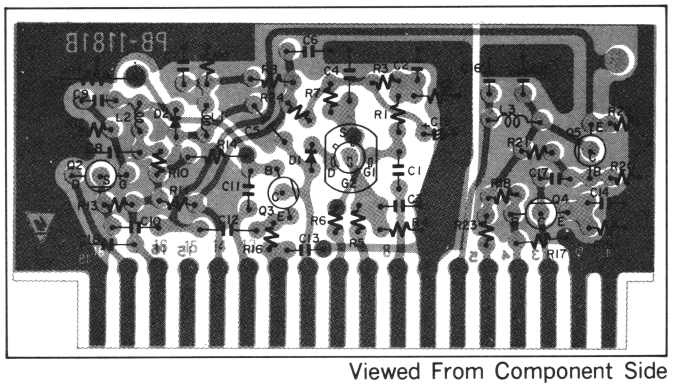
IF UNIT PB-1183

FUNCTIONAL BLOCK DIAGRAM

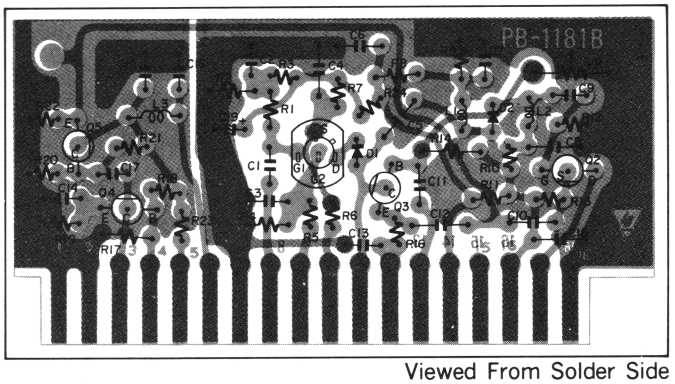


HIGH FREQUENCY(RF)UNIT PB-1181(A~Z)





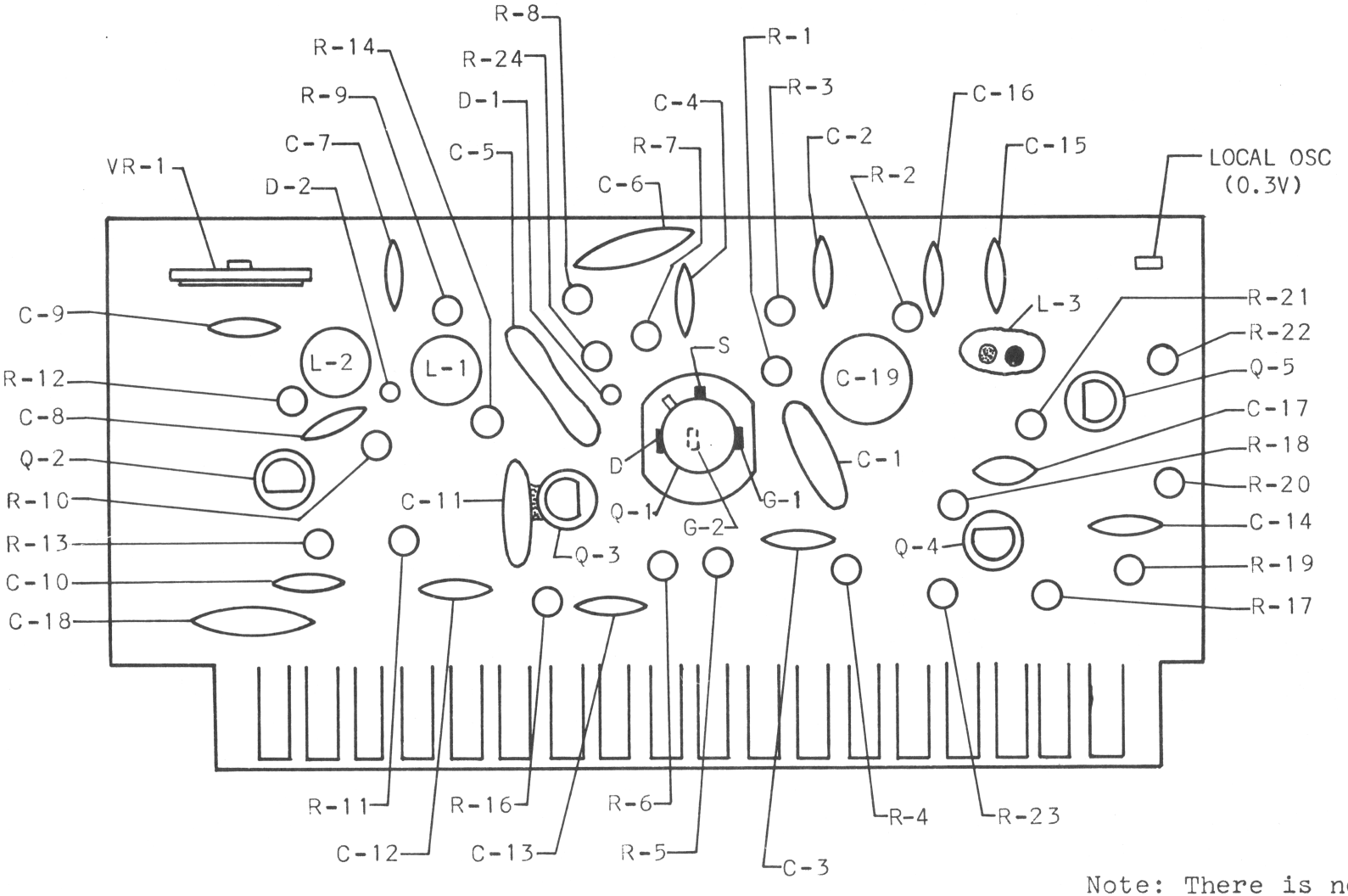
Viewed From Component Side



Viewed From Solder Side

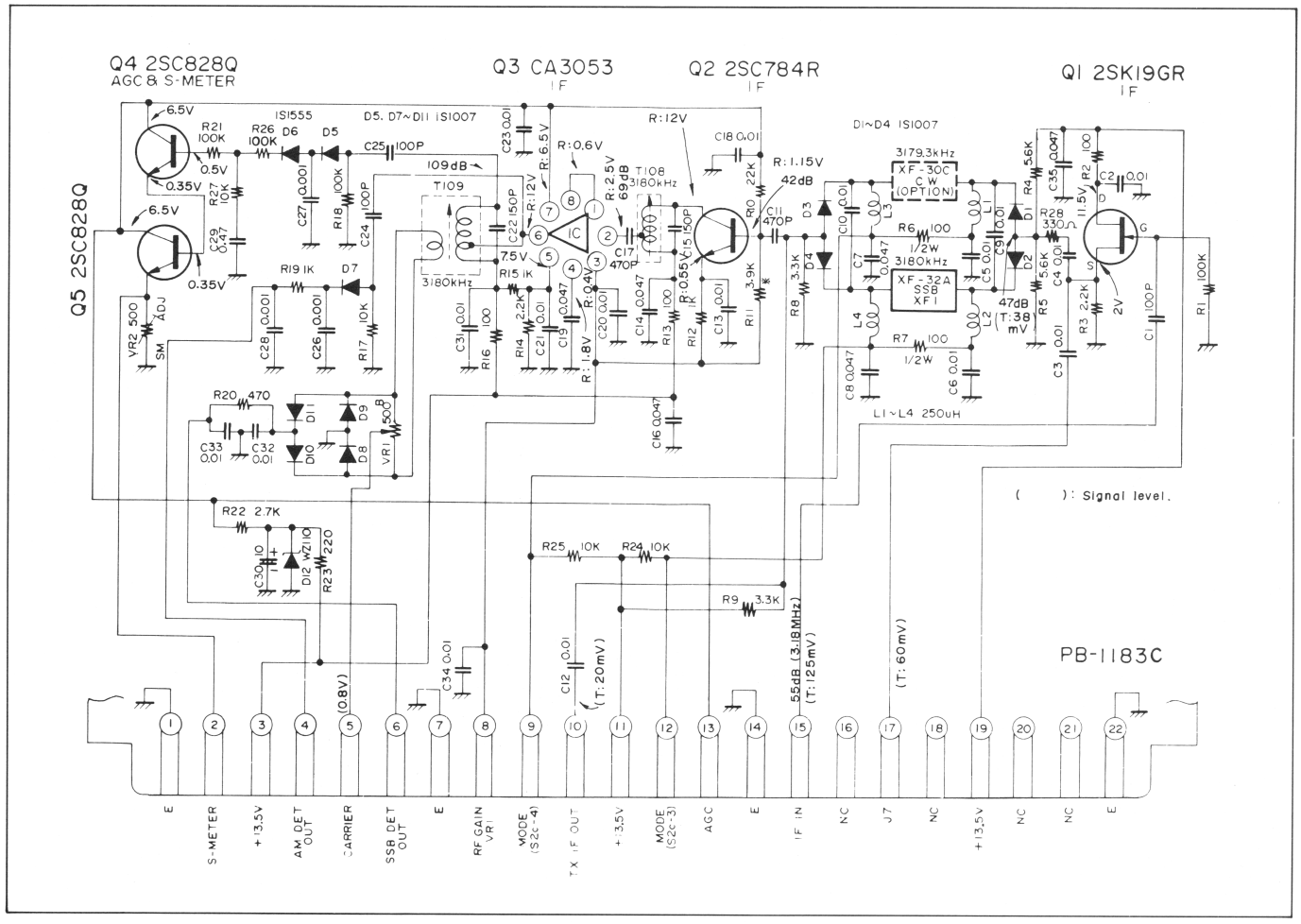
HIGH FREQUENCY(RF) UNIT

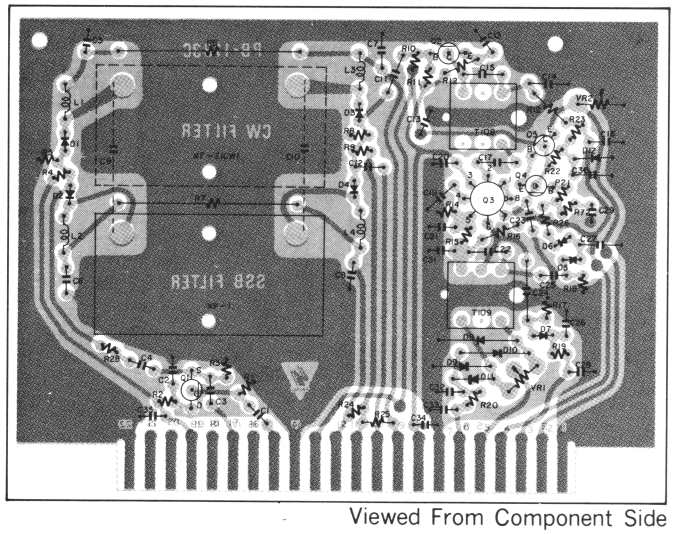
PB-1181



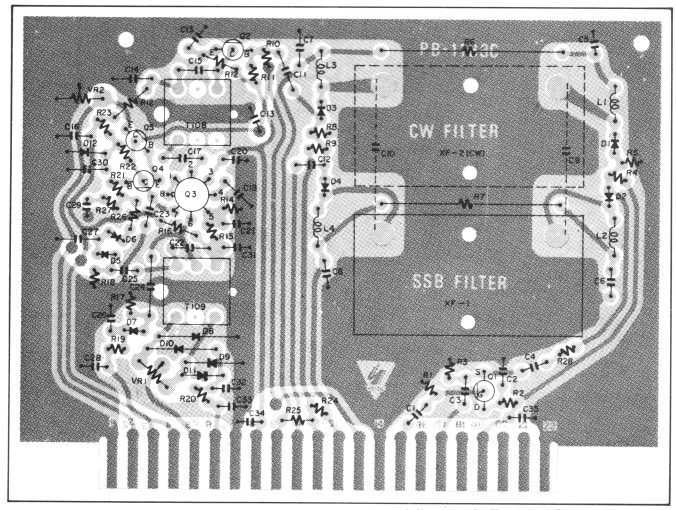
Note: There is no R-I5 resistor

LOW FREQUENCY IF UNIT PB-1183(A~Z)





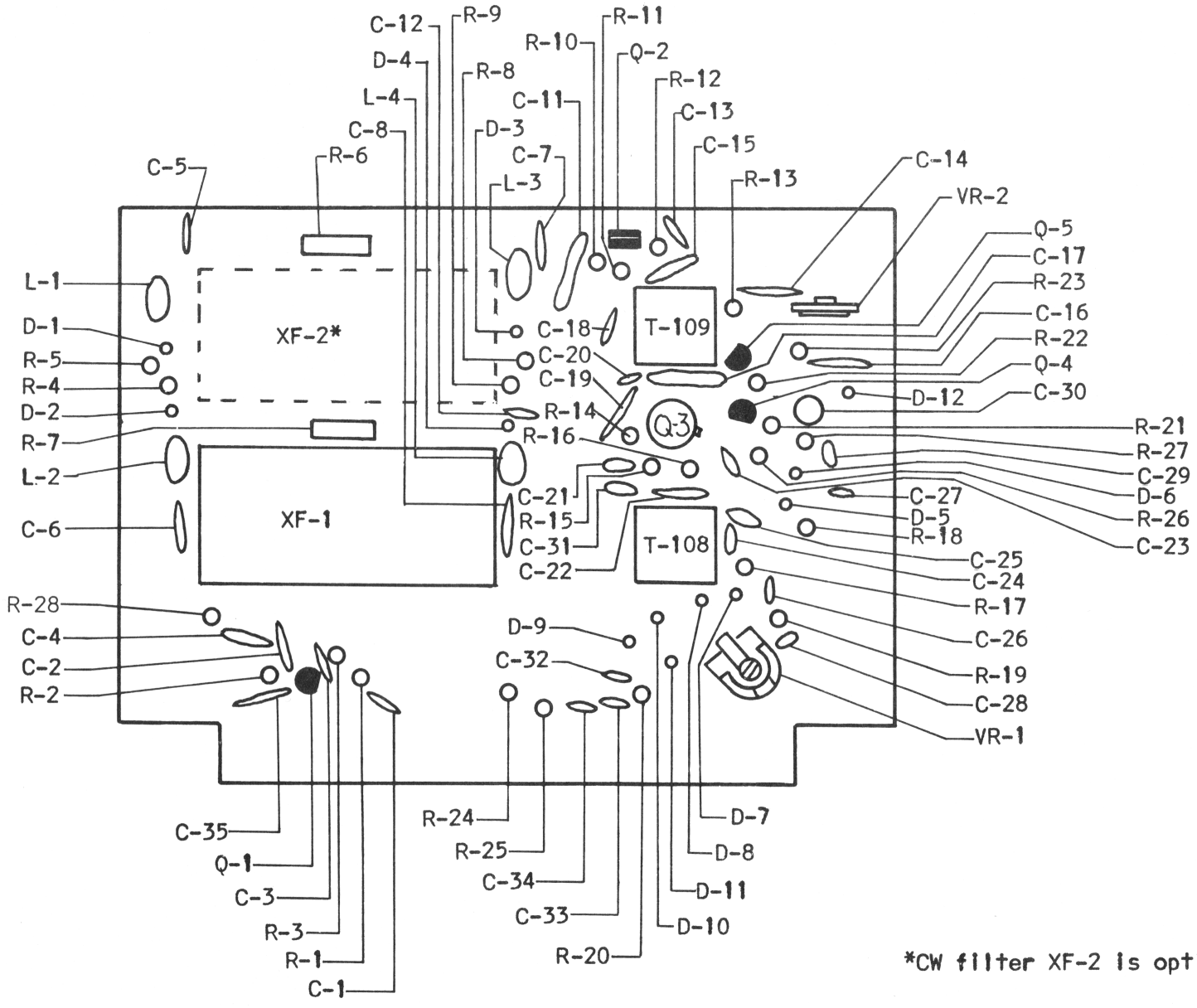
Viewed From Component Side



Viewed From Solder Side

LOW FREQUENCY IF UNIT

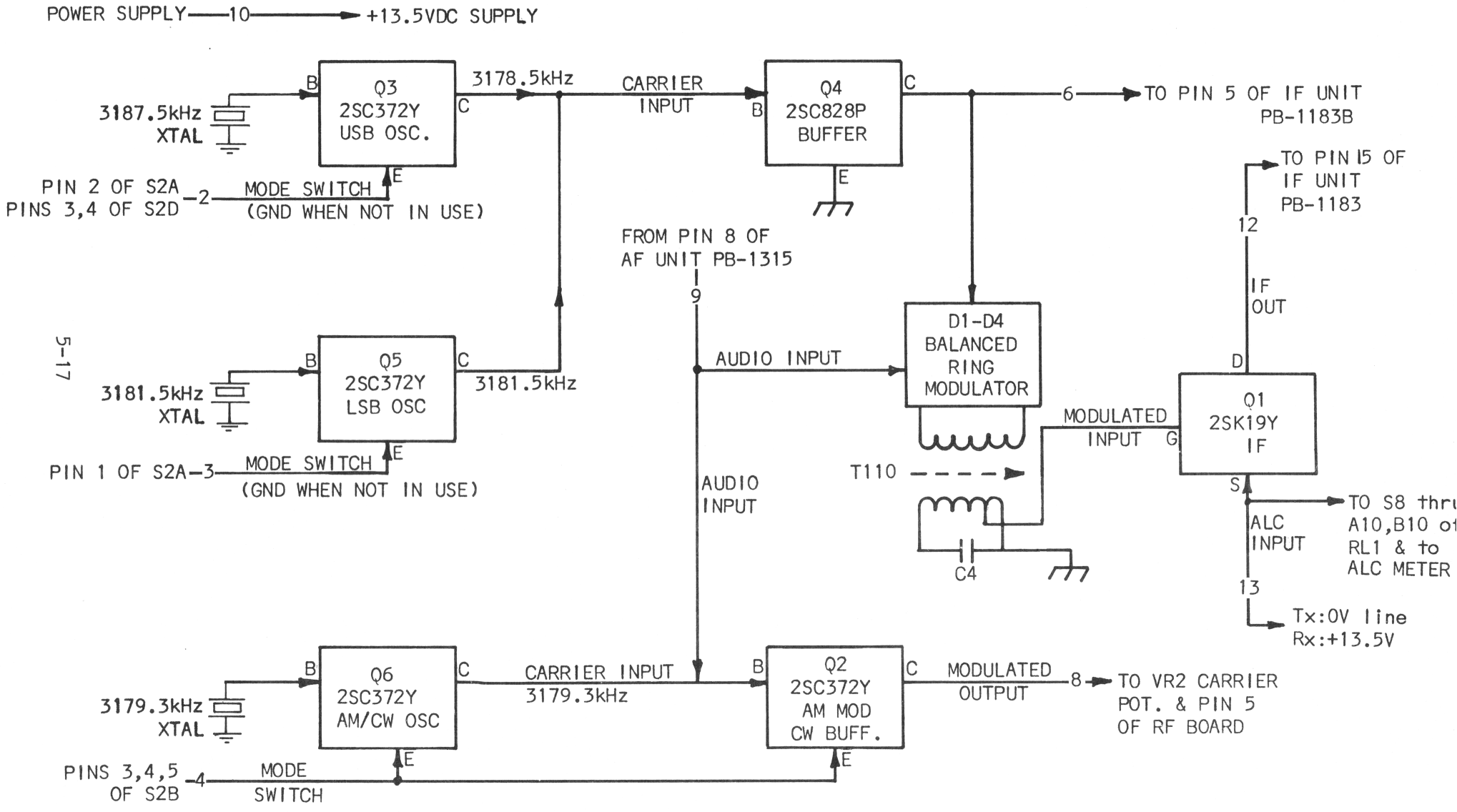
PB-1183



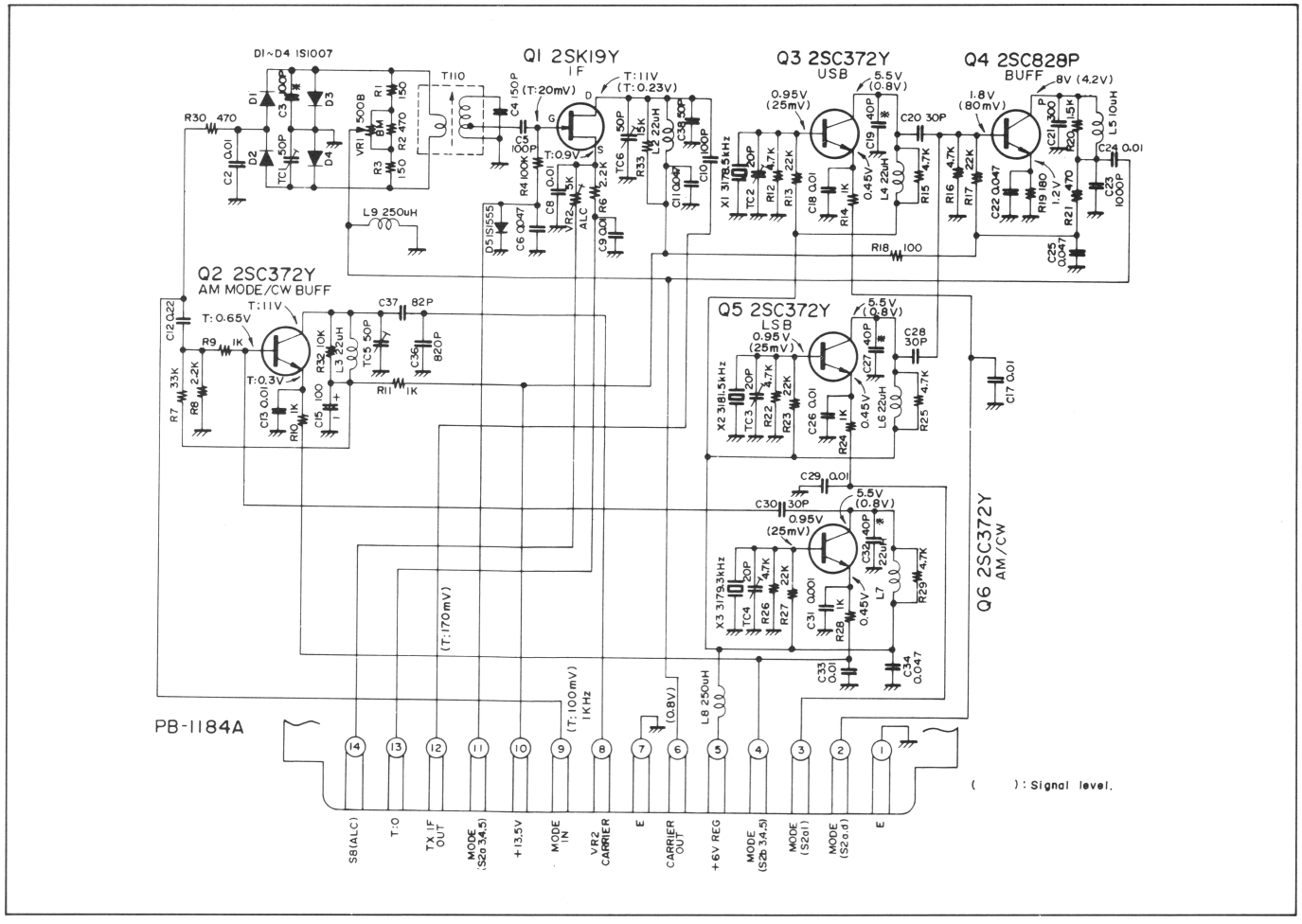
*CW filter XF-2 is optional

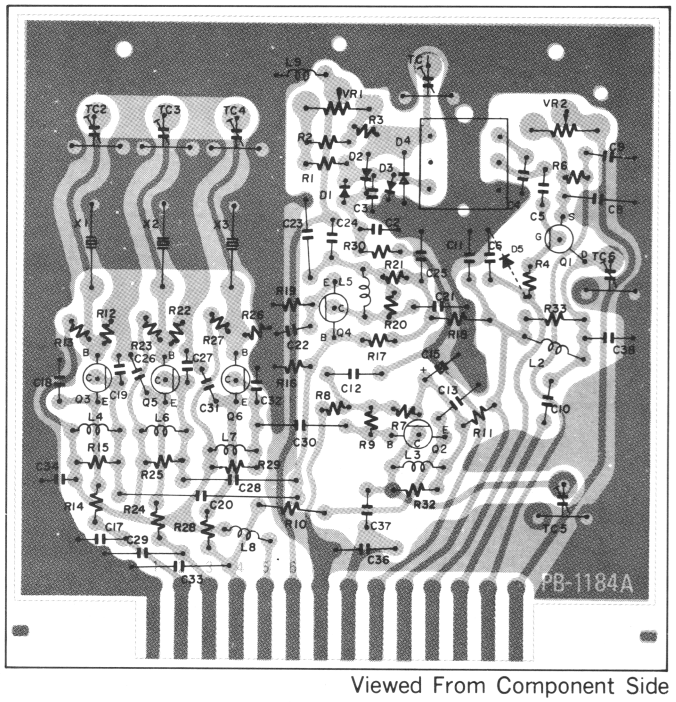
MOD. and OSC. UNIT PB-1184

FUNCTIONAL BLOCK DIAGRAM

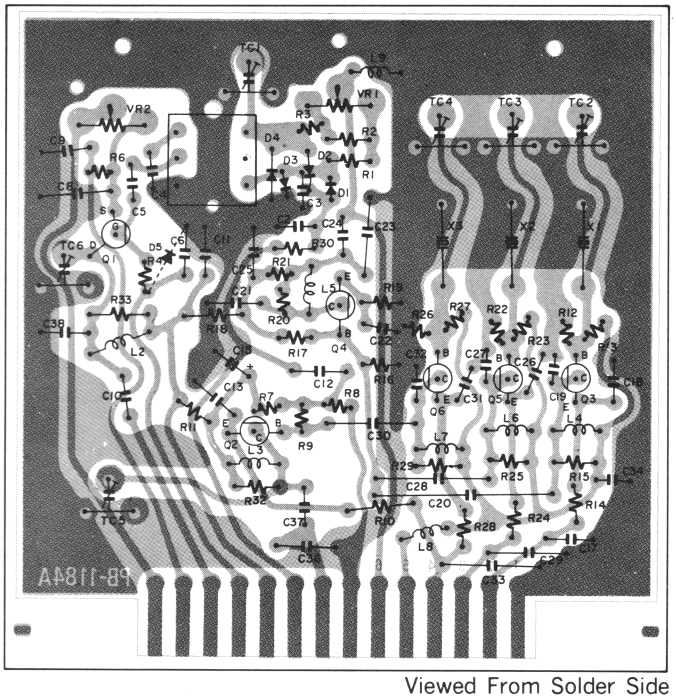


MODULATOR UNIT PB-1184(A~Z)



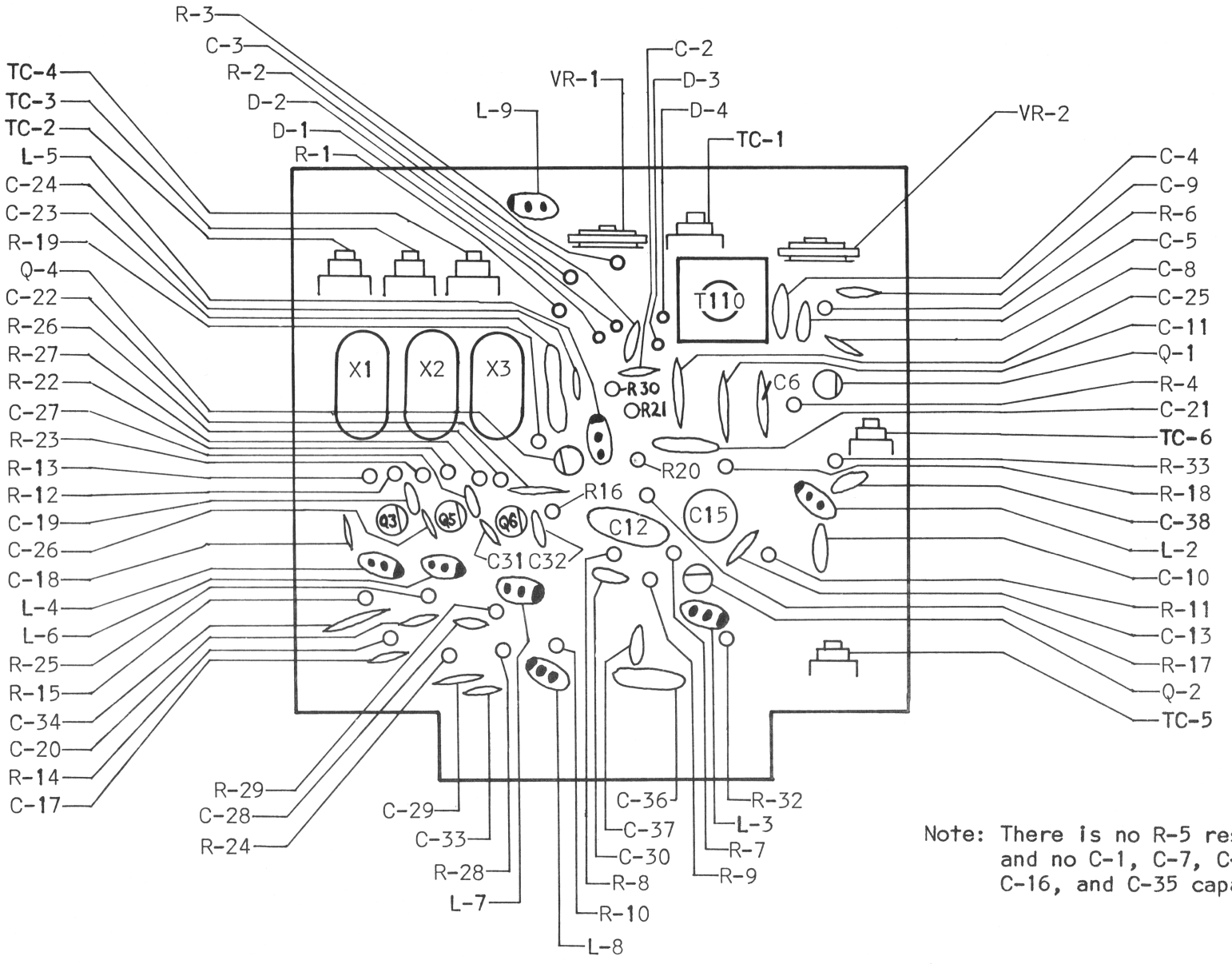


Viewed From Component Side



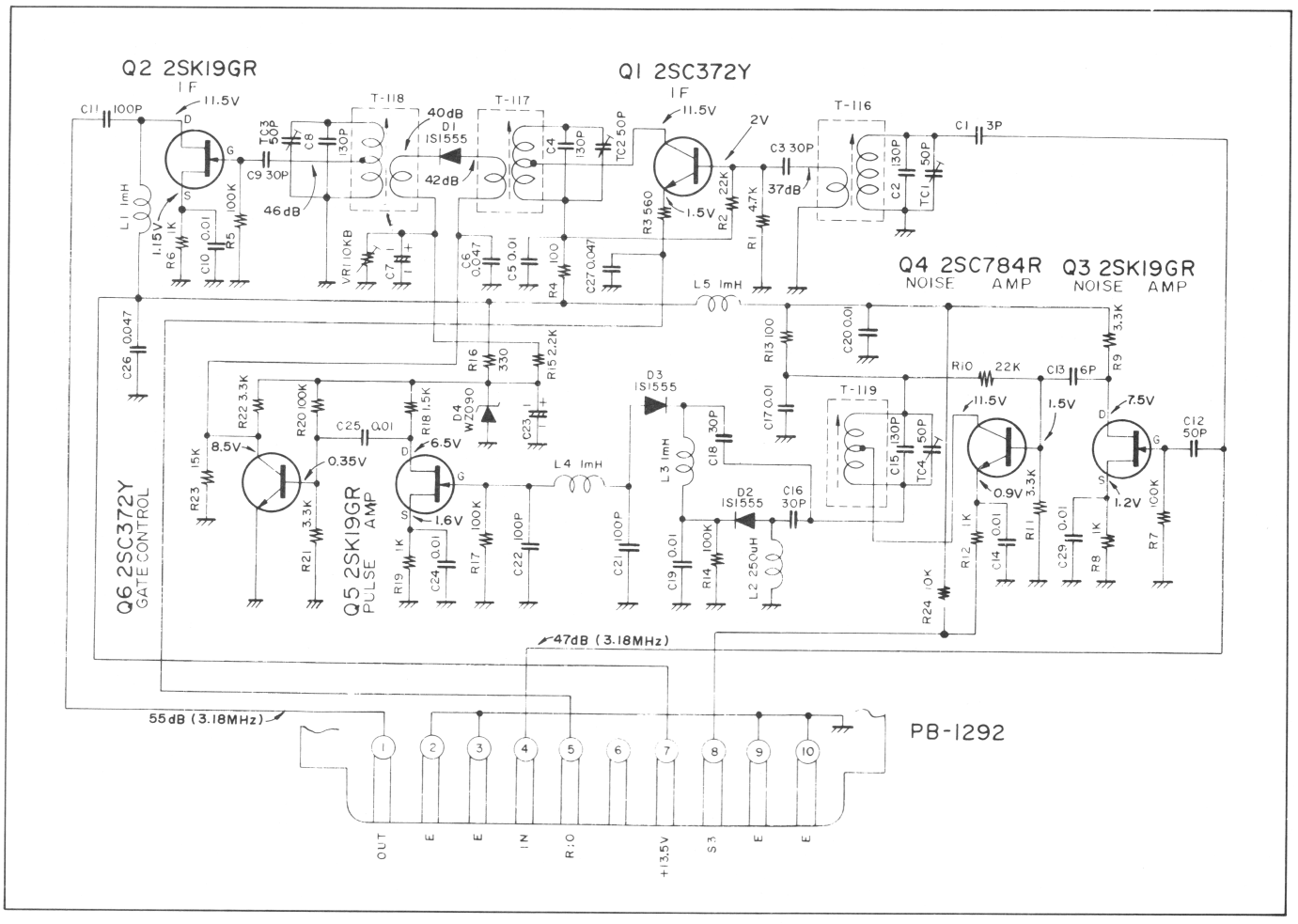
Viewed From Solder Side

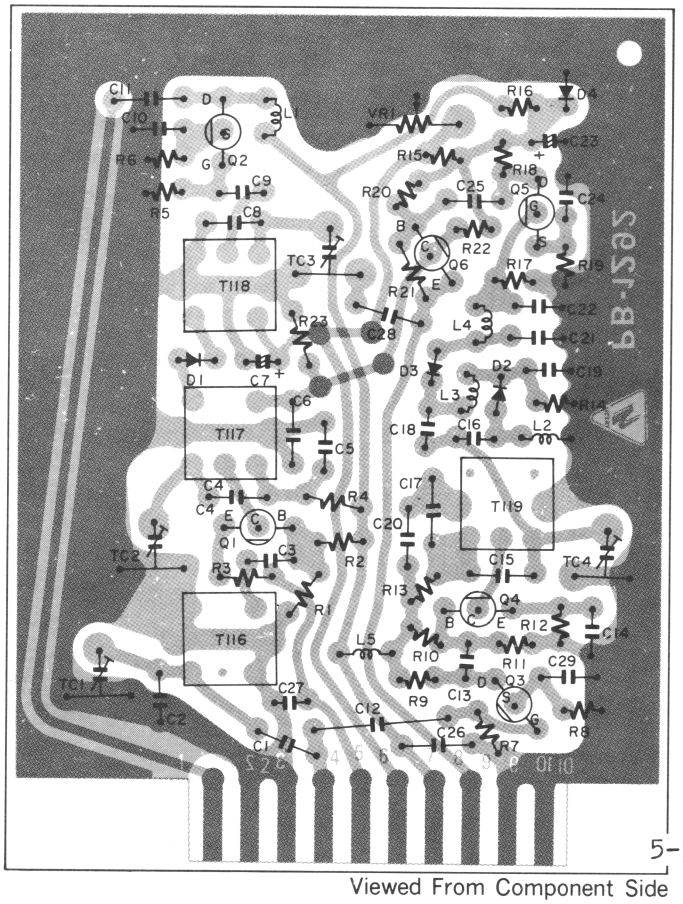
MODULATOR UNIT
PB-1184



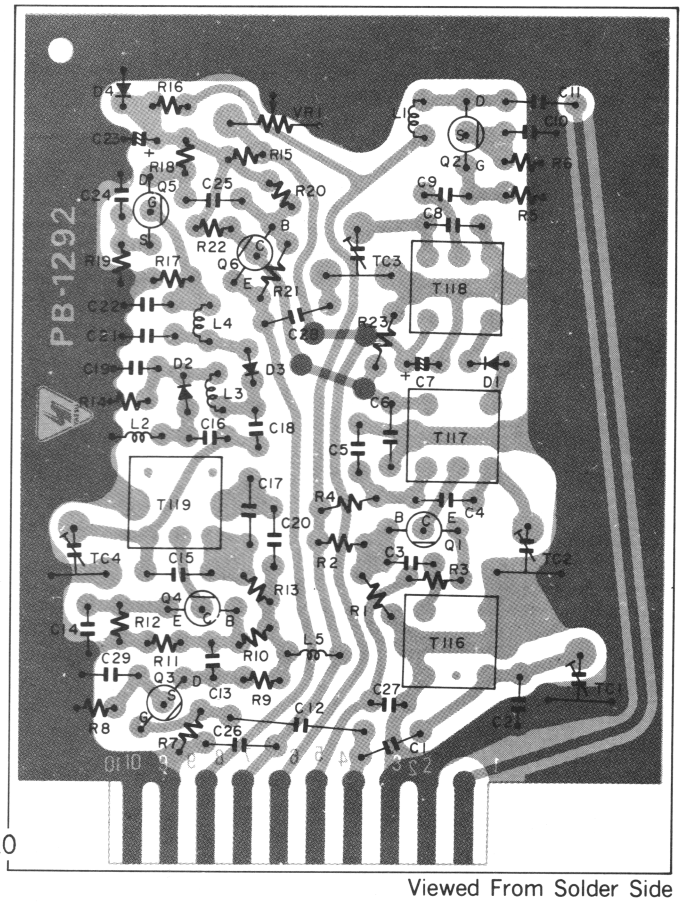
Note: There is no R-5 resistor and no C-1, C-7, C-14, C-16, and C-35 capacitors

NOISE BLANKER UNIT PB-1292(A~Z)



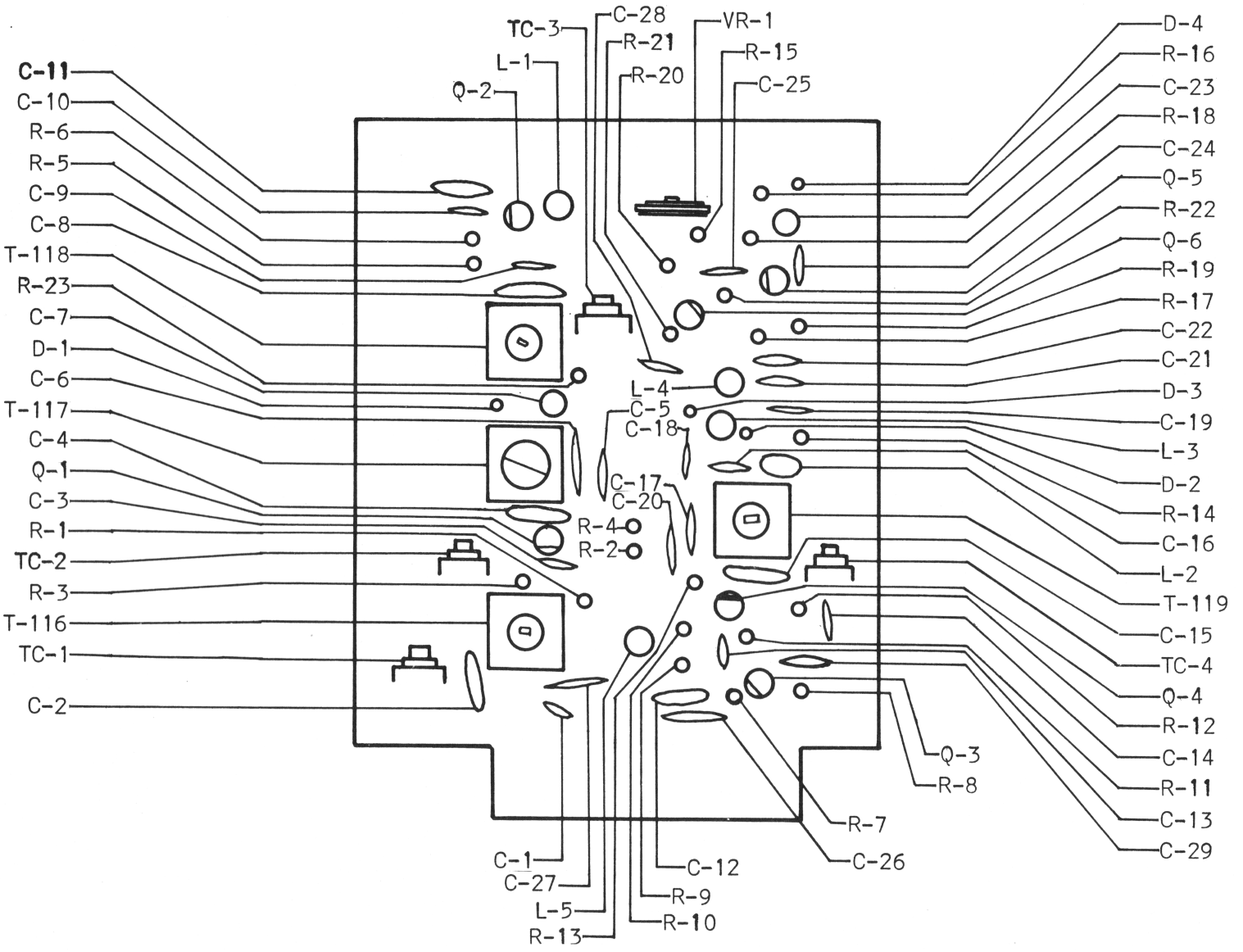


Viewed From Component Side

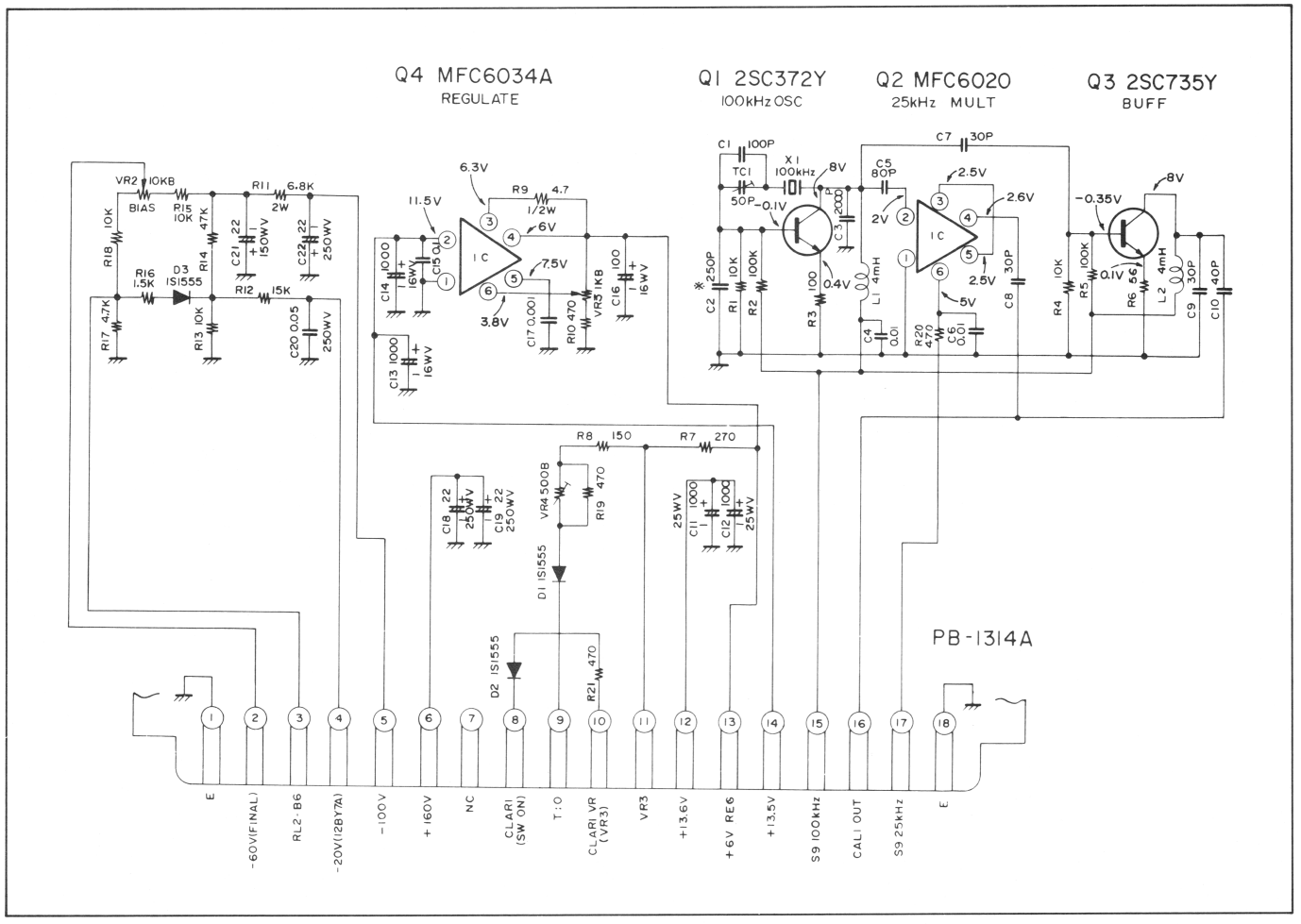


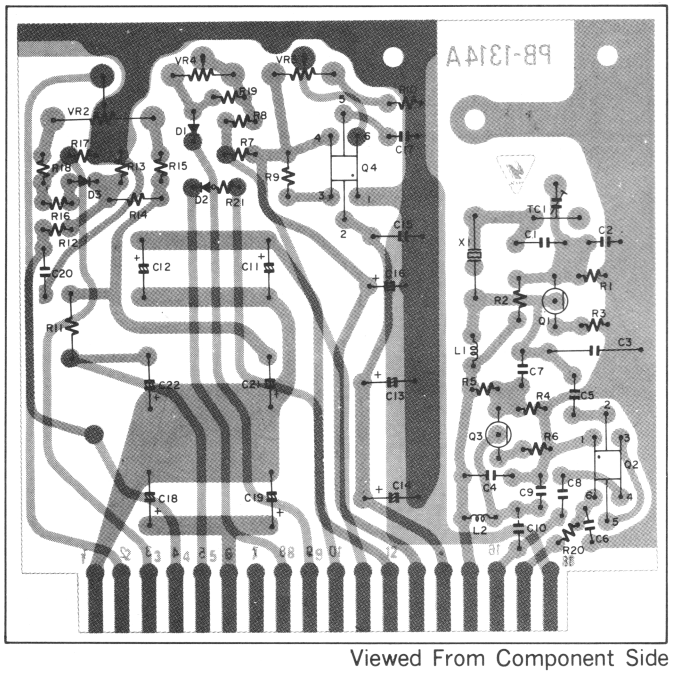
Viewed From Solder Side

NOISE BLANKER UNIT
PB-1292

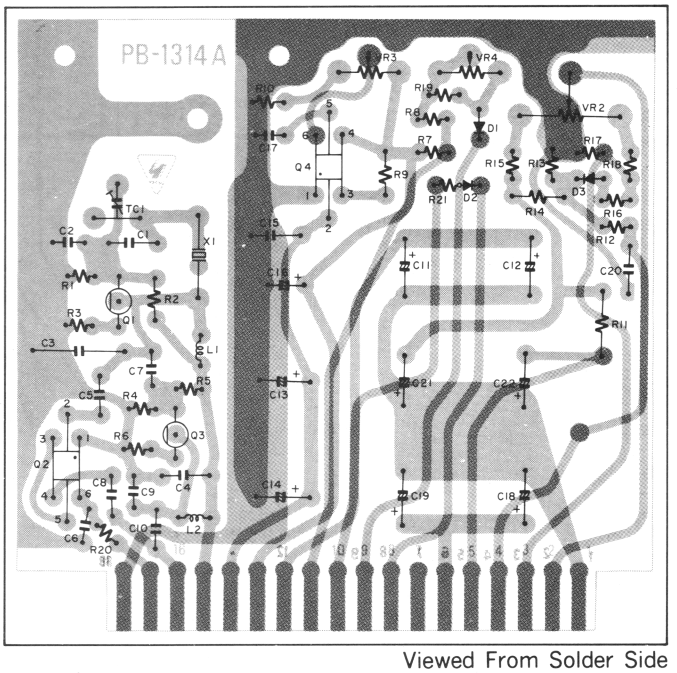


POWER REGULATOR UNIT PB-1314 (A~Z)





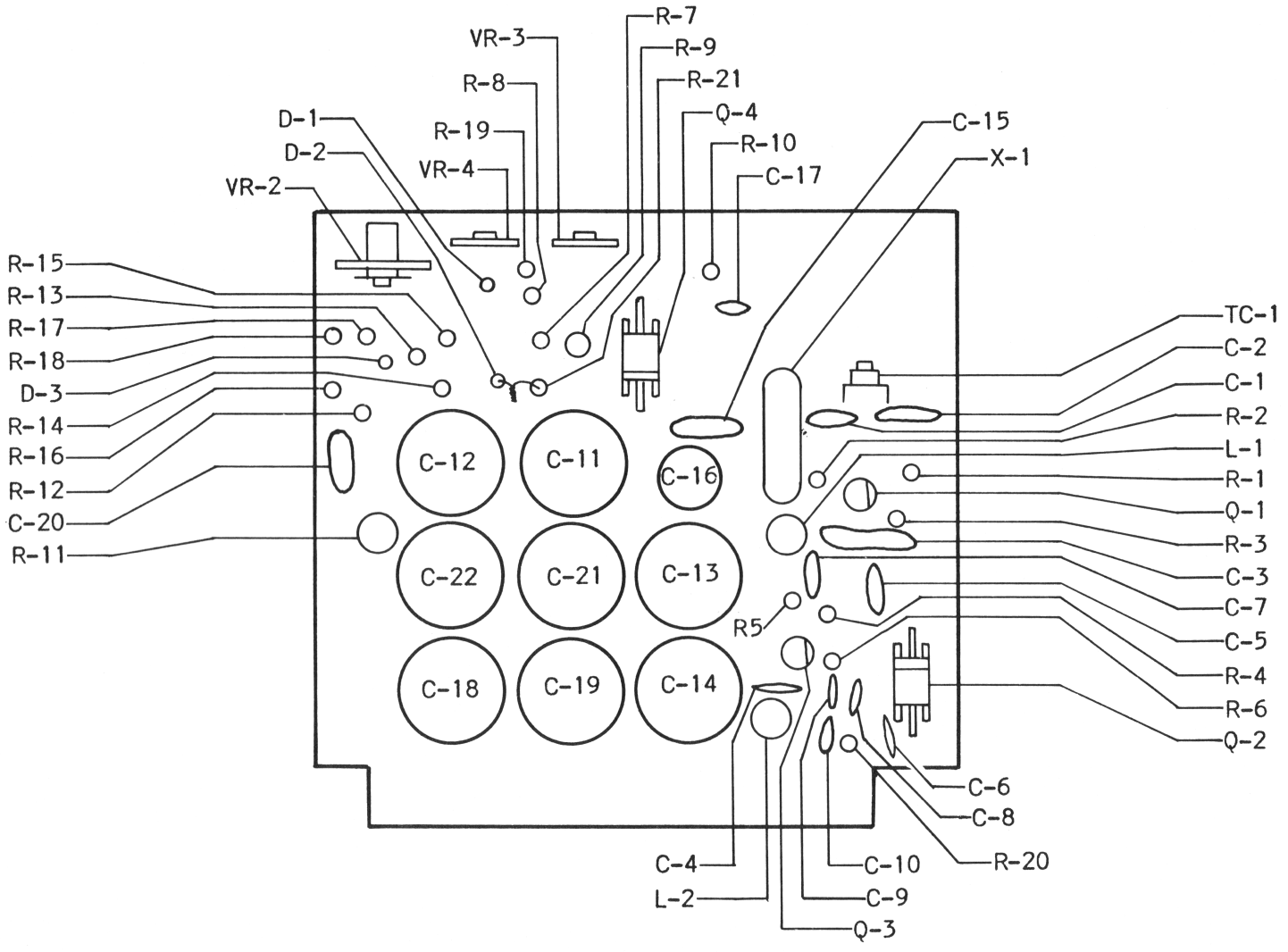
Viewed From Component Side



Viewed From Solder Side

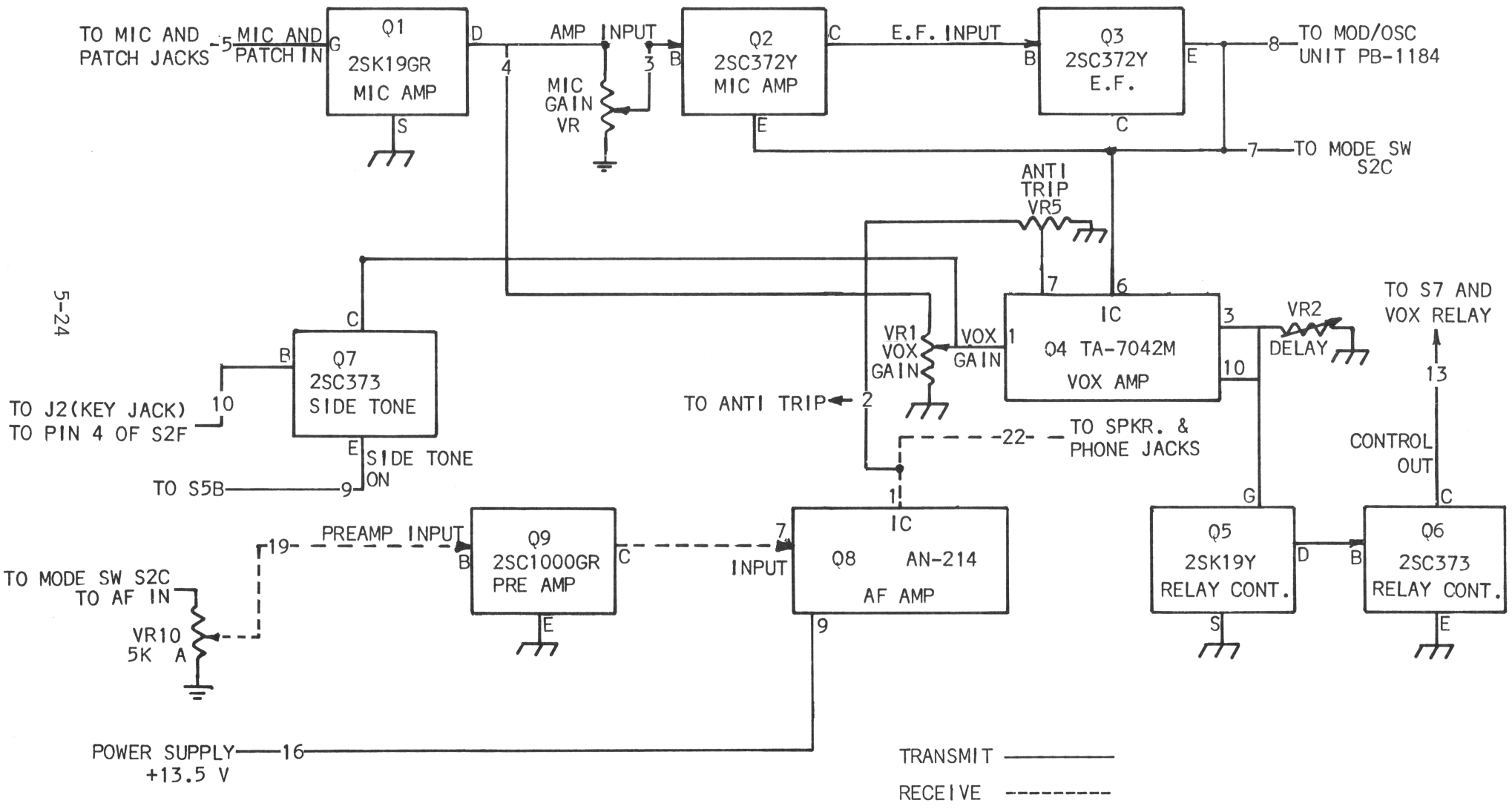
POWER REGULATOR UNIT

PB-1314

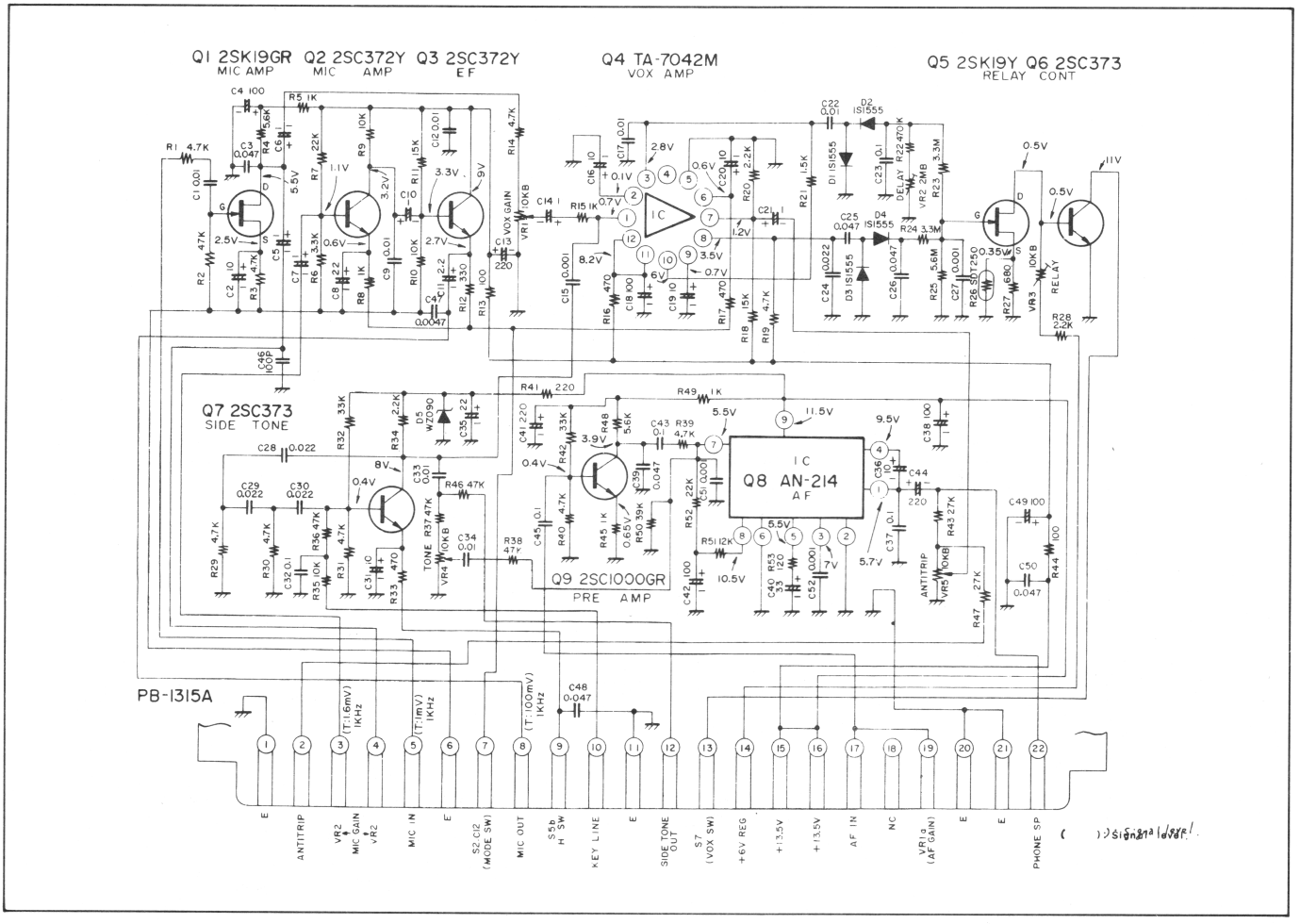


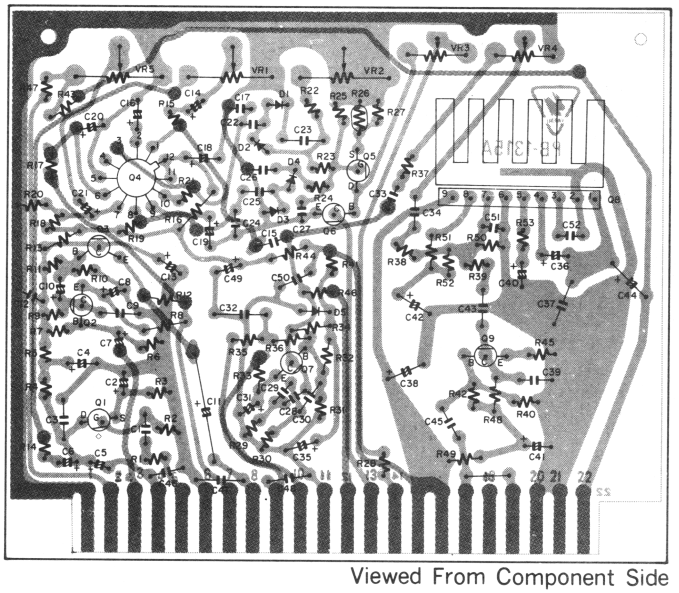
AUDIO UNIT PB-1315

FUNCTIONAL BLOCK DIAGRAM

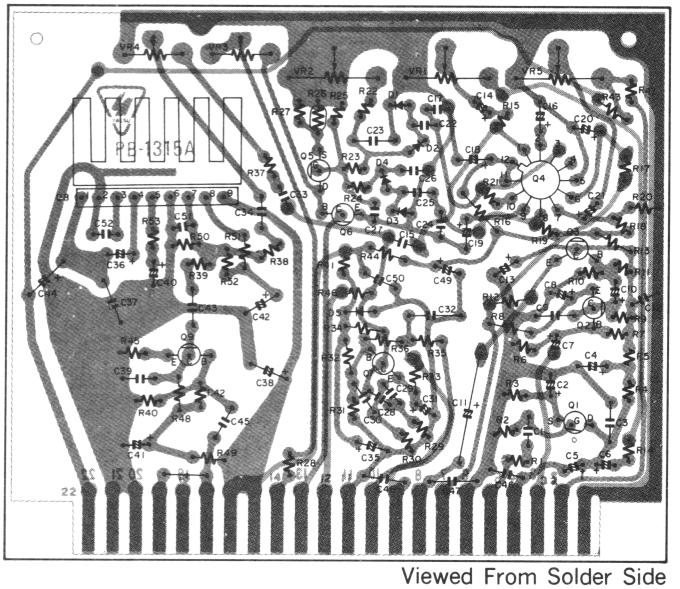


AUDIO UNIT PB-1315(A~Z)





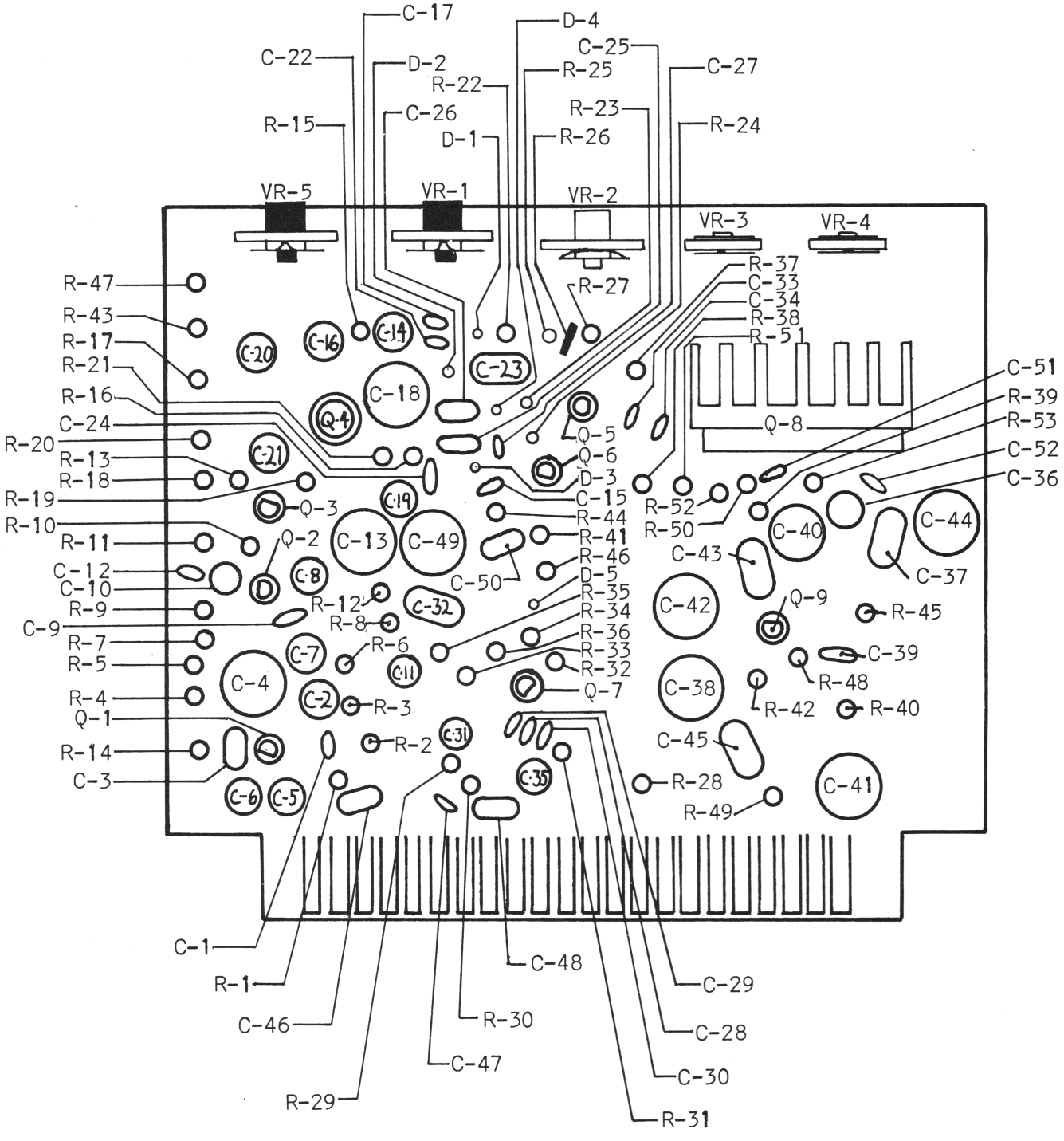
Viewed From Component Side



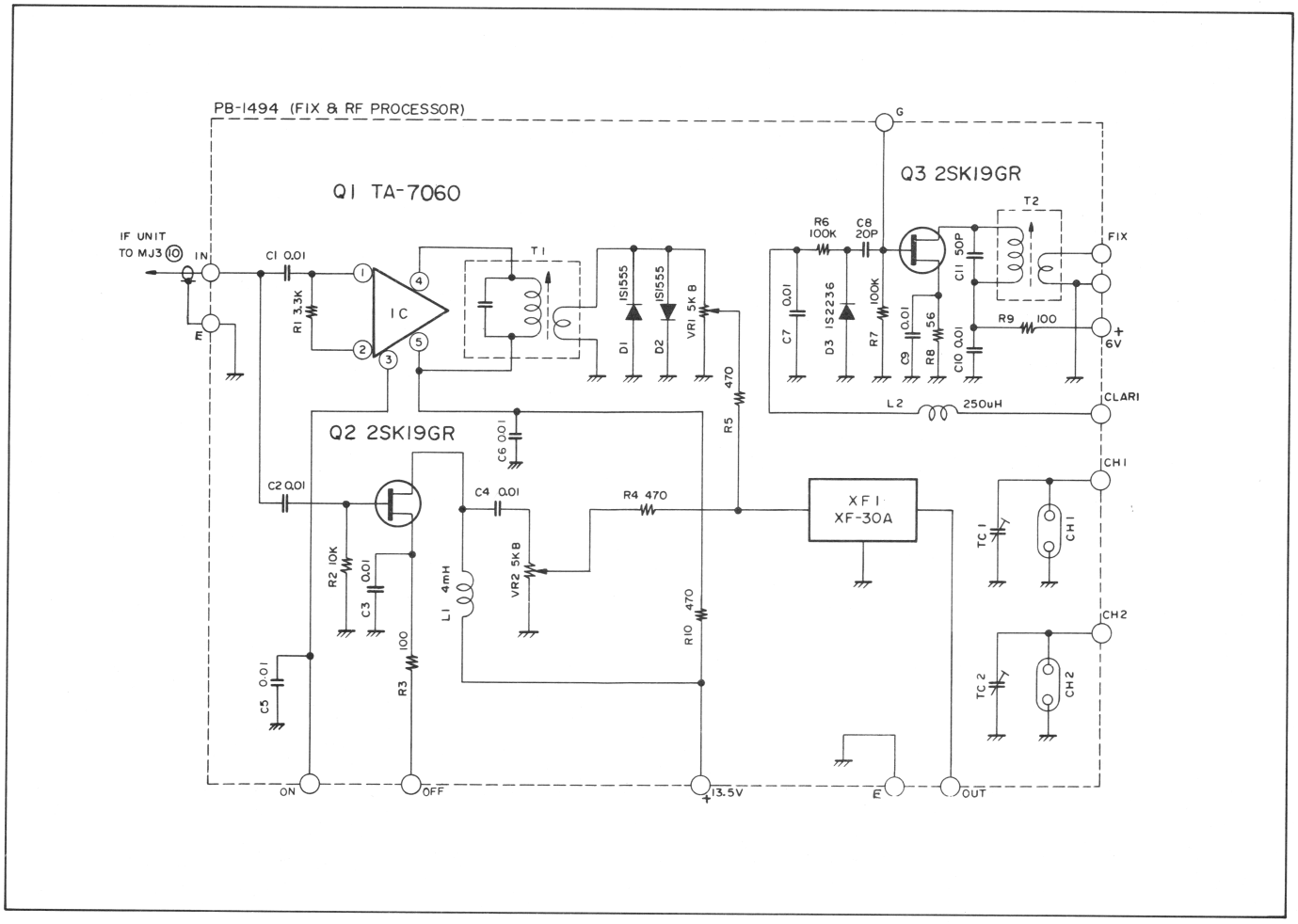
Viewed From Solder Side

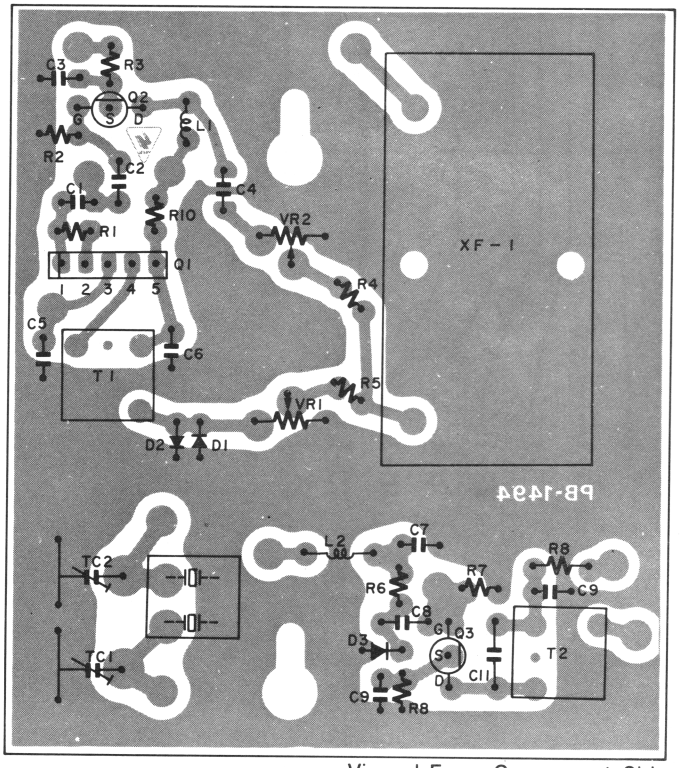
AUDIO UNIT

PB-1315

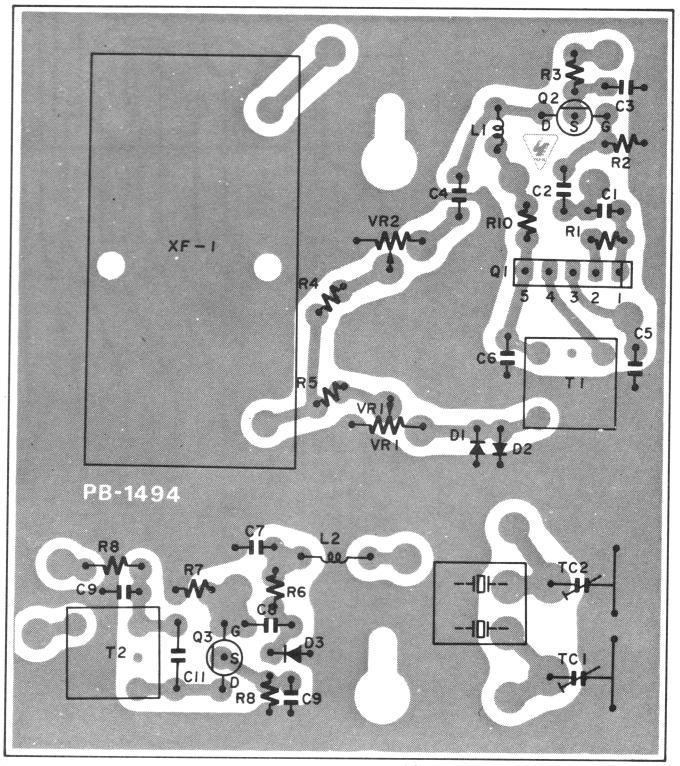


RF SPEECH PROCESSOR CRYSTAL CONTROL UNIT PB-1494





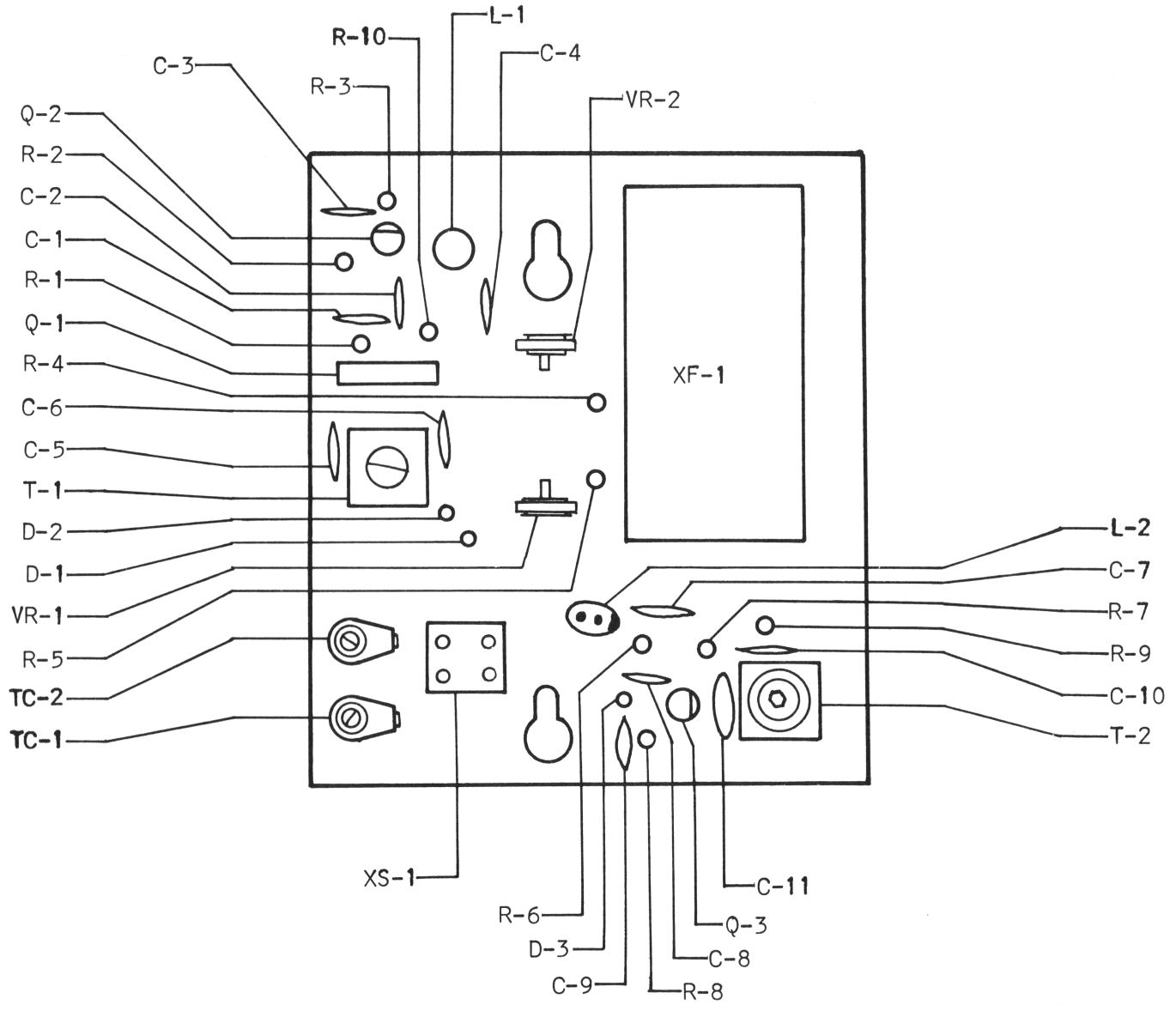
Viewed From Component Side



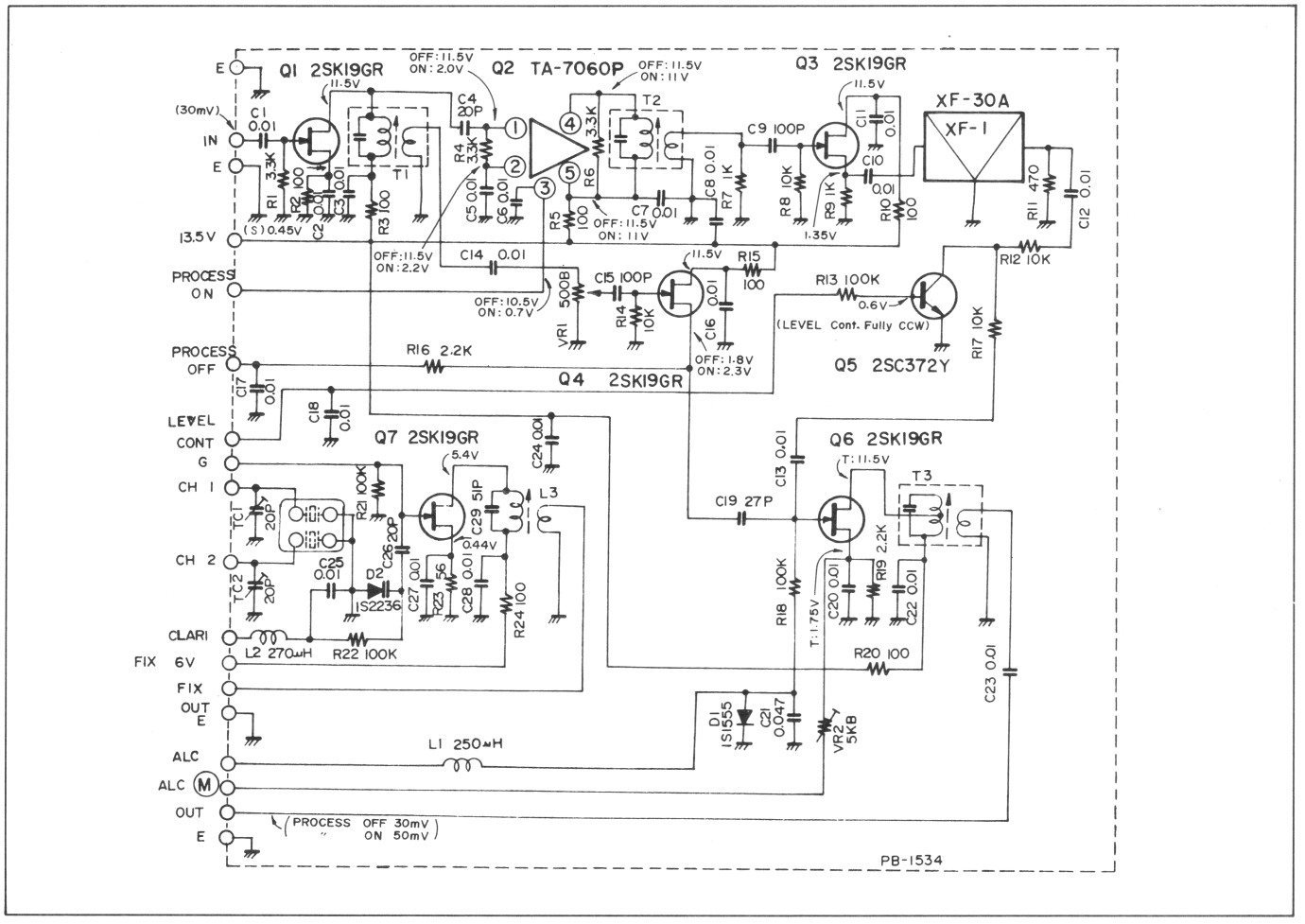
Viewed From Solder Side

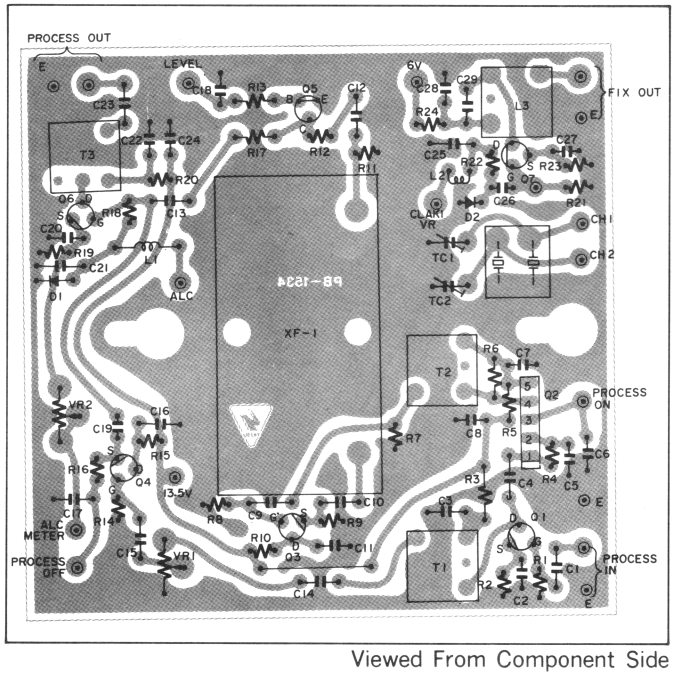
RF SPEECH PROCESSOR CRYSTAL CONTROL

PB-1494

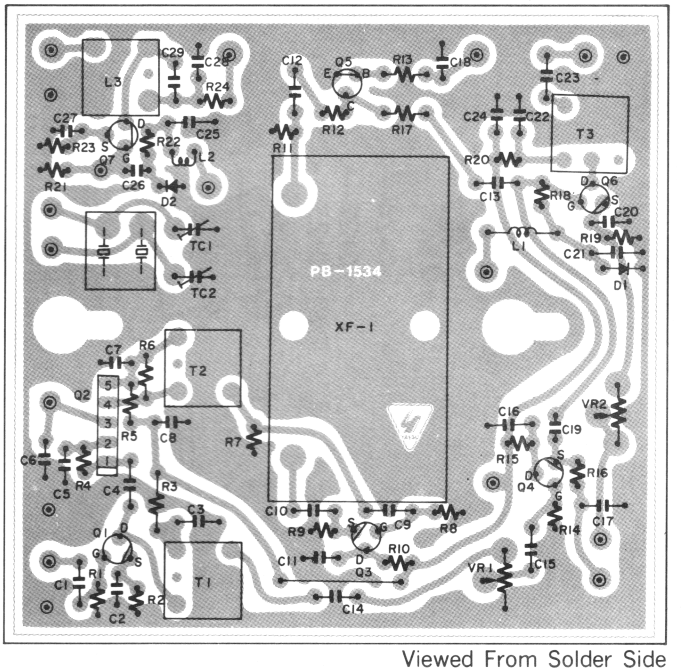


RF SPEECH PROCESSOR, CRYSTAL CONTROL UNIT PB-1534(A~Z)



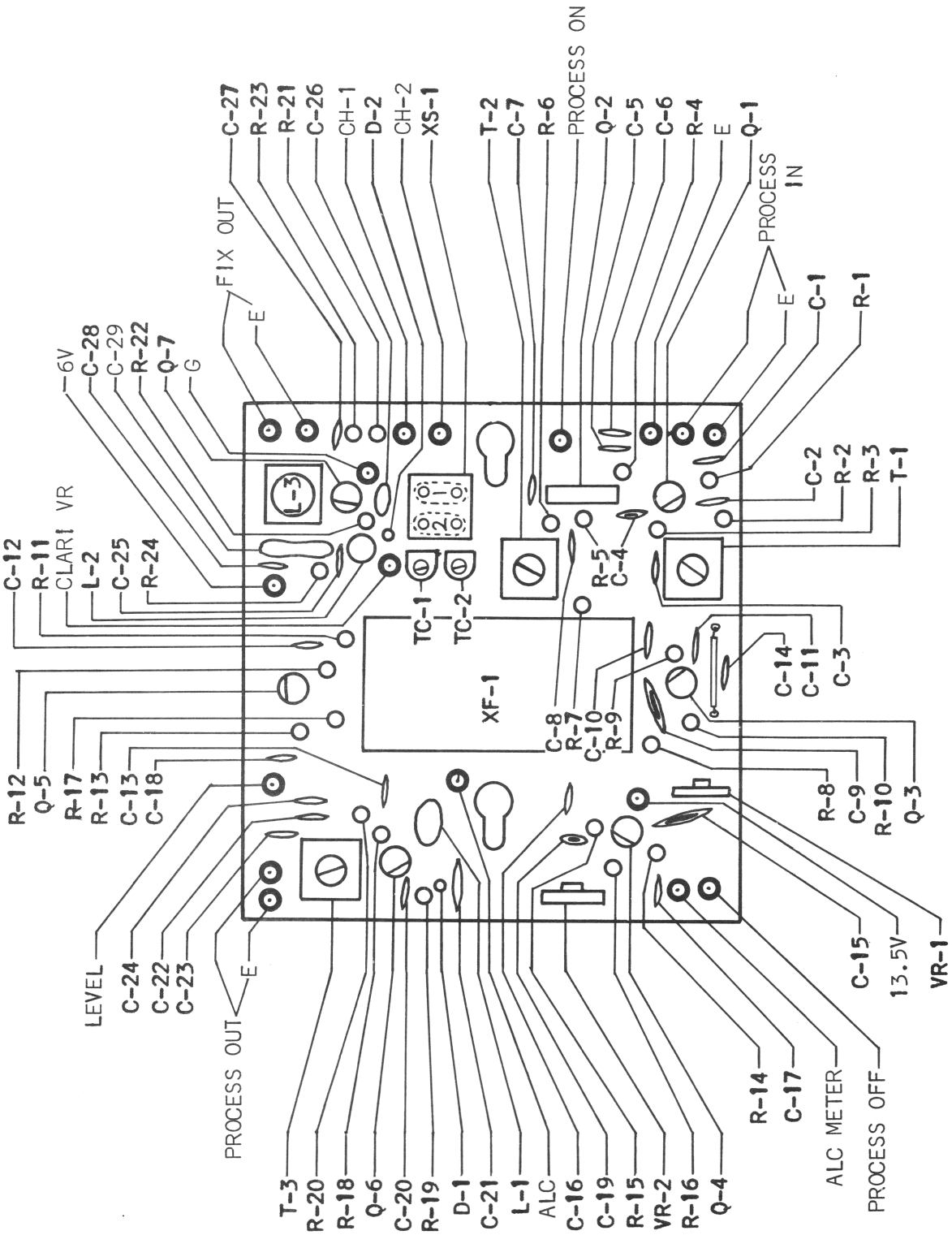


Viewed From Component Side



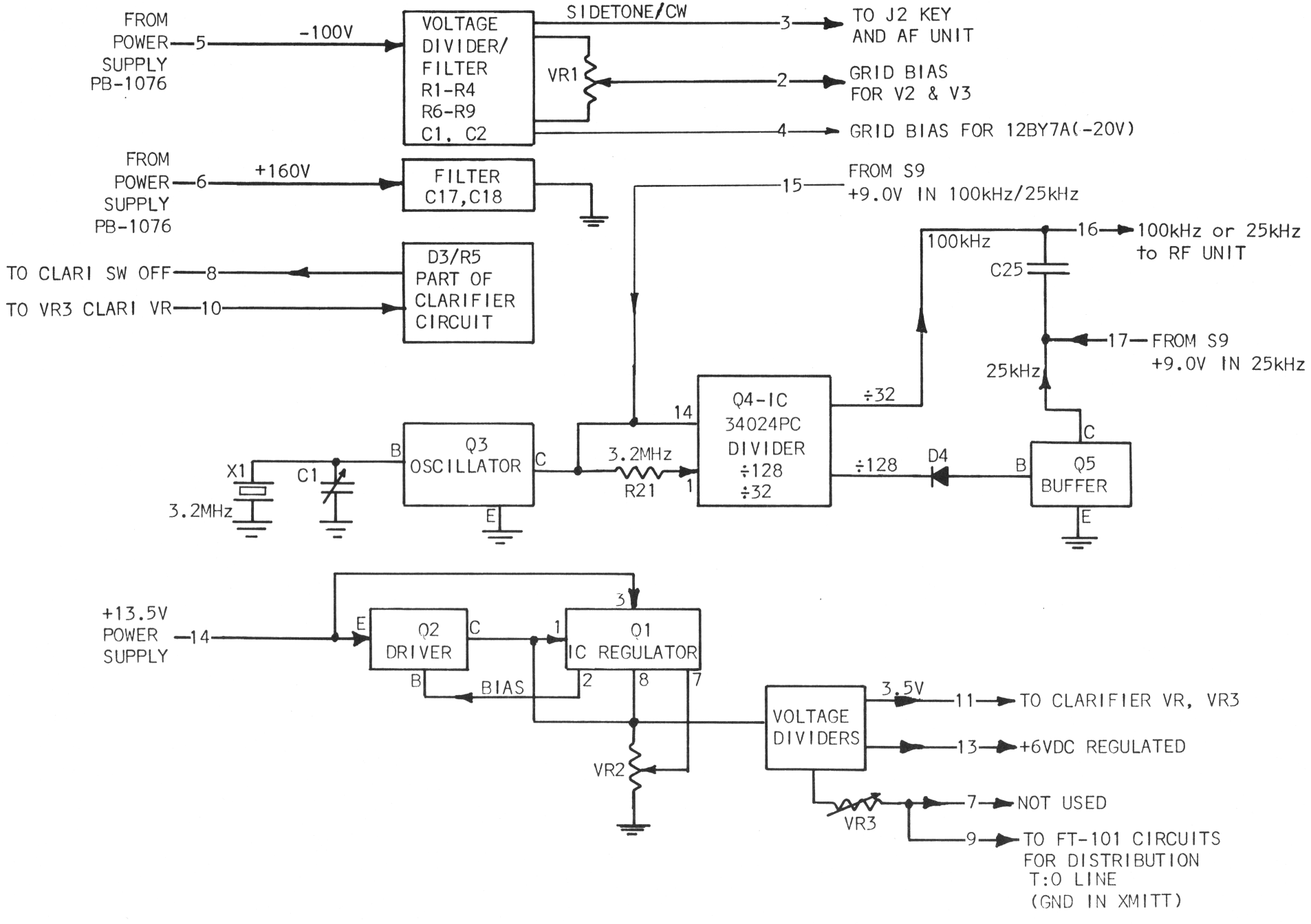
Viewed From Solder Side

RF SPEECH PROCESSOR
PB-1534

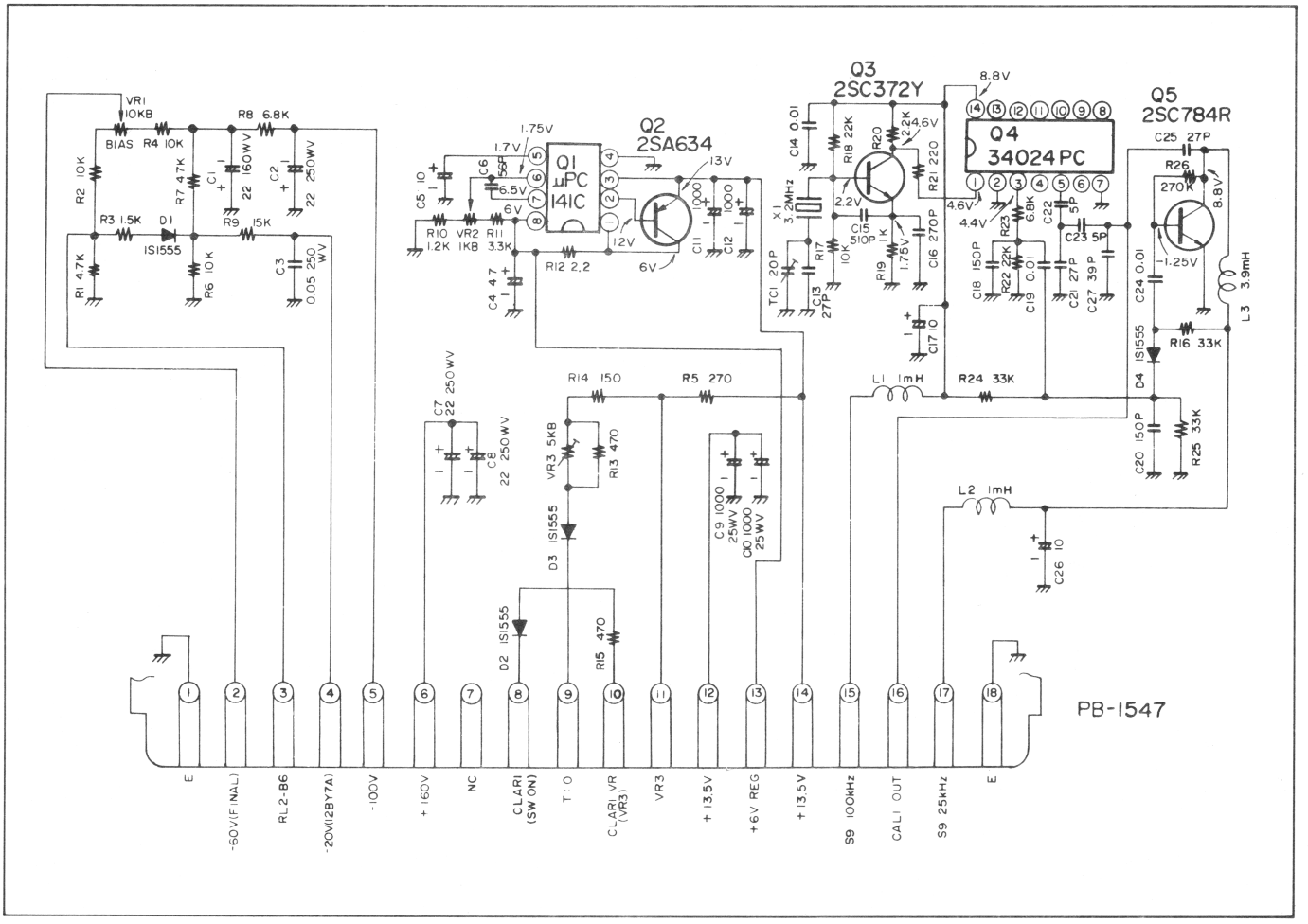


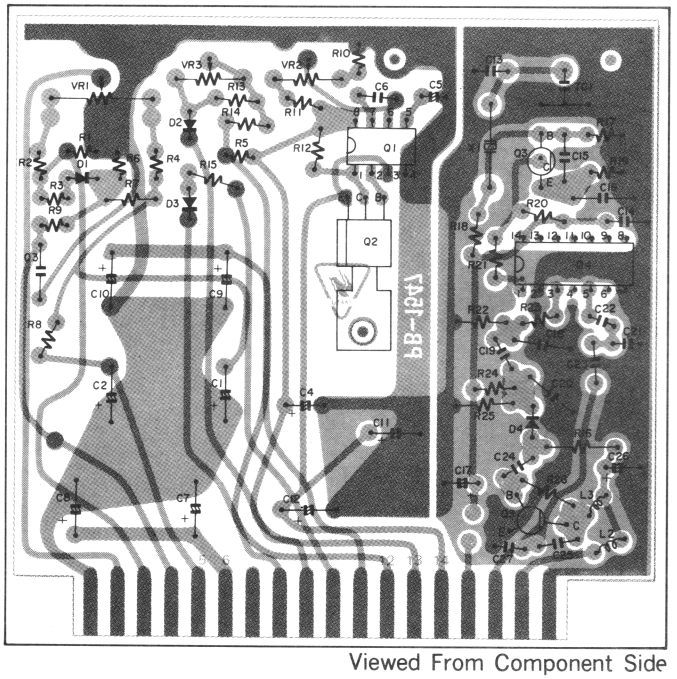
REG. and CALIB. UNIT PB-1547

FUNCTIONAL BLOCK DIAGRAM

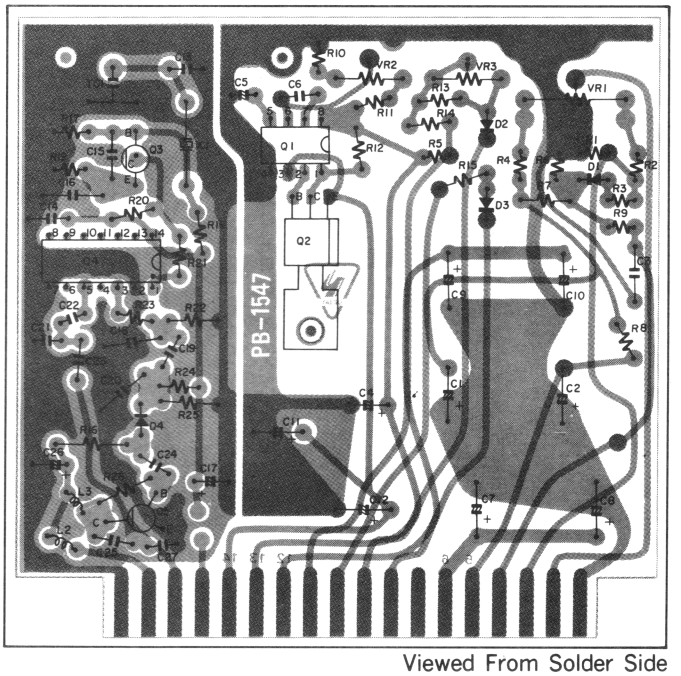


POWER REGULATOR UNIT PB-1547





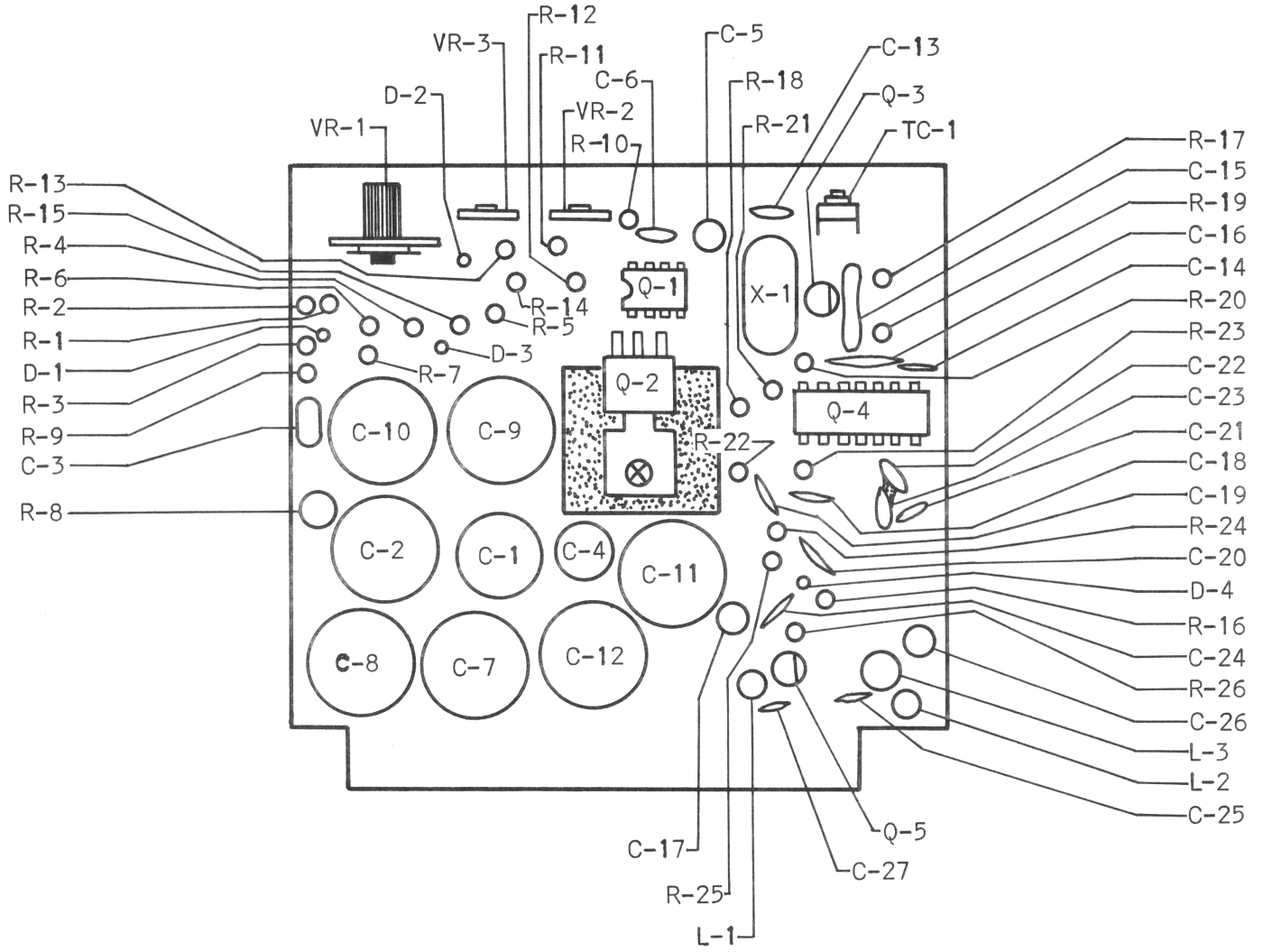
Viewed From Component Side



Viewed From Solder Side

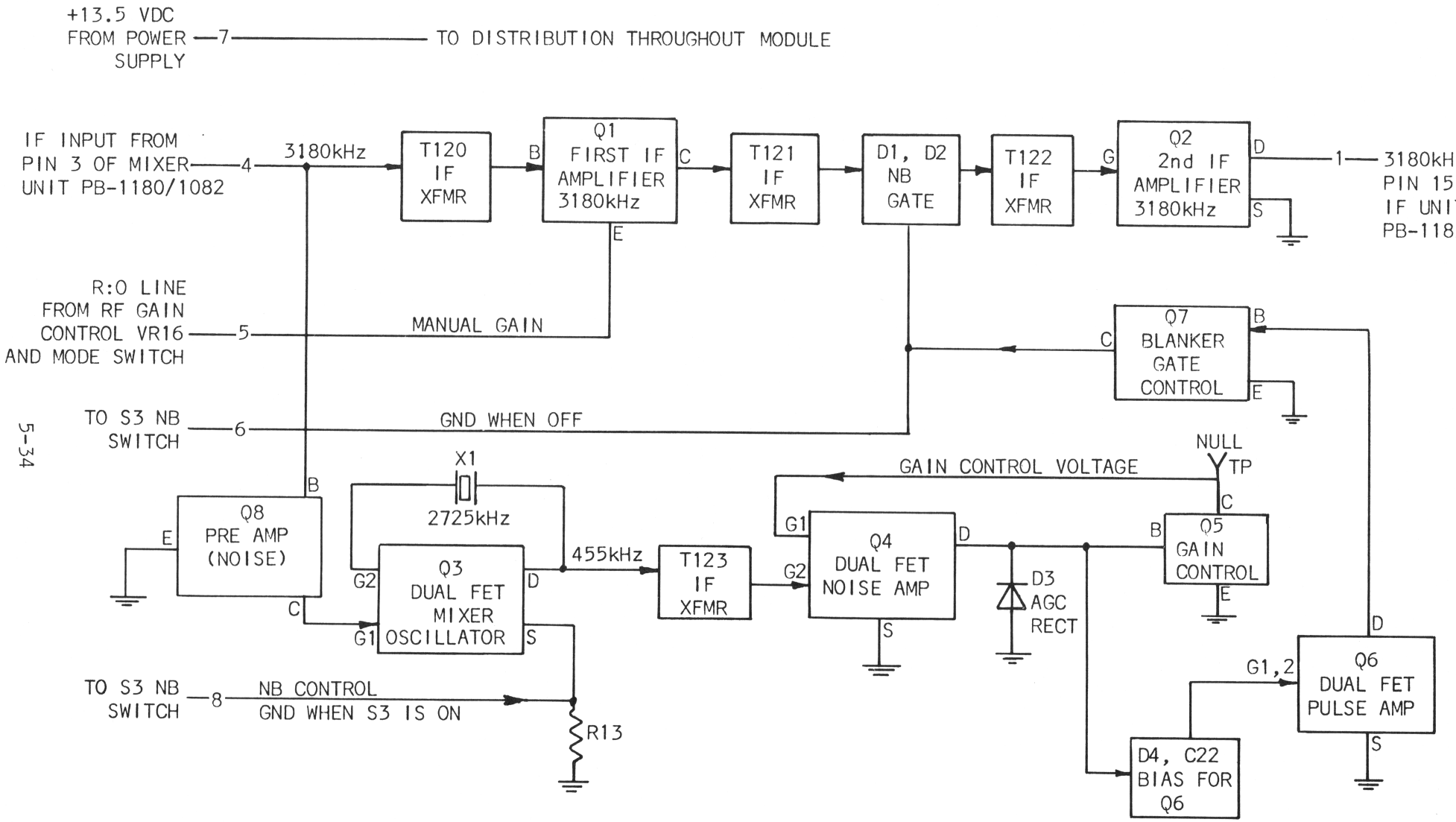
POWER REGULATOR UNIT

PB-1547

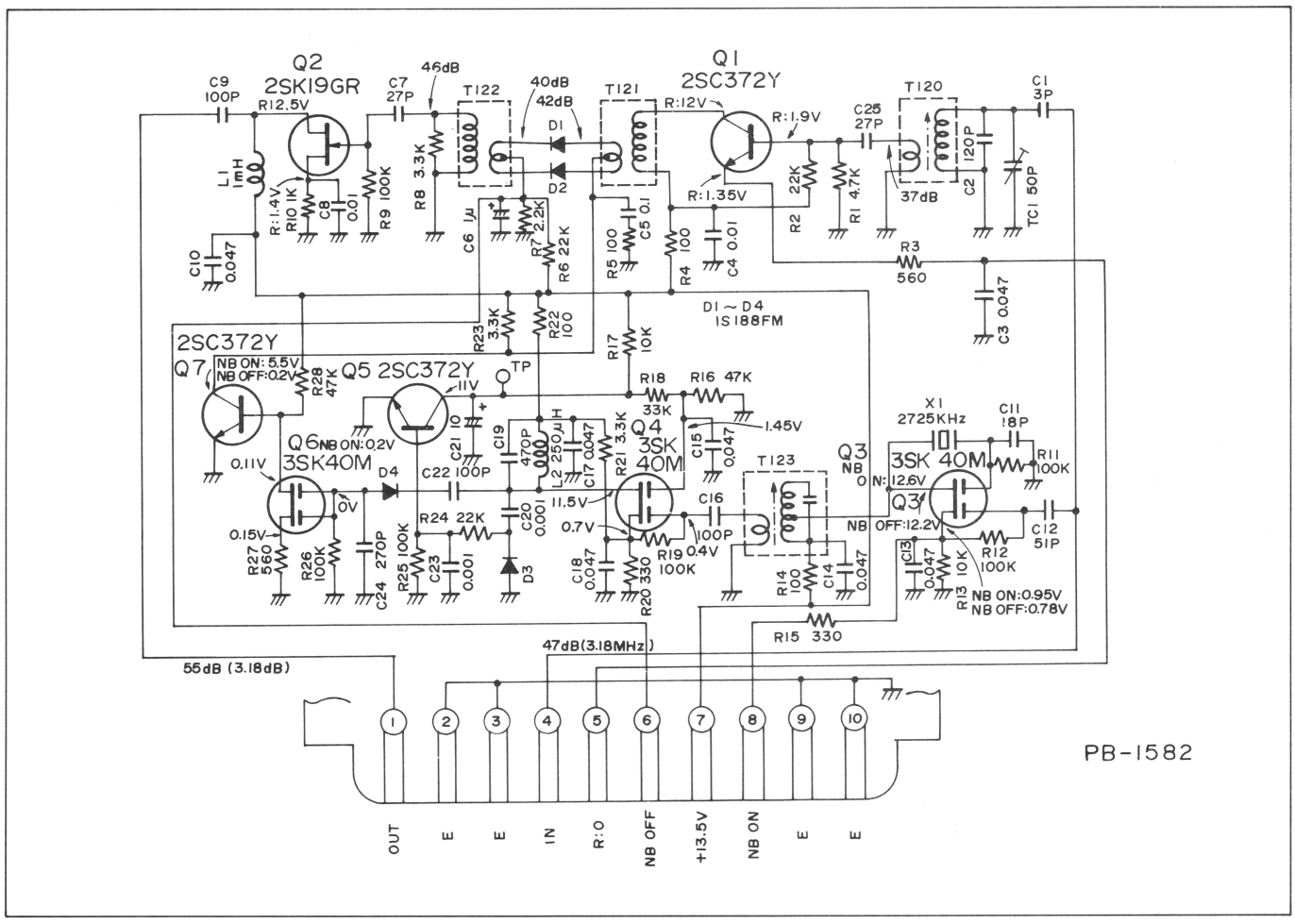


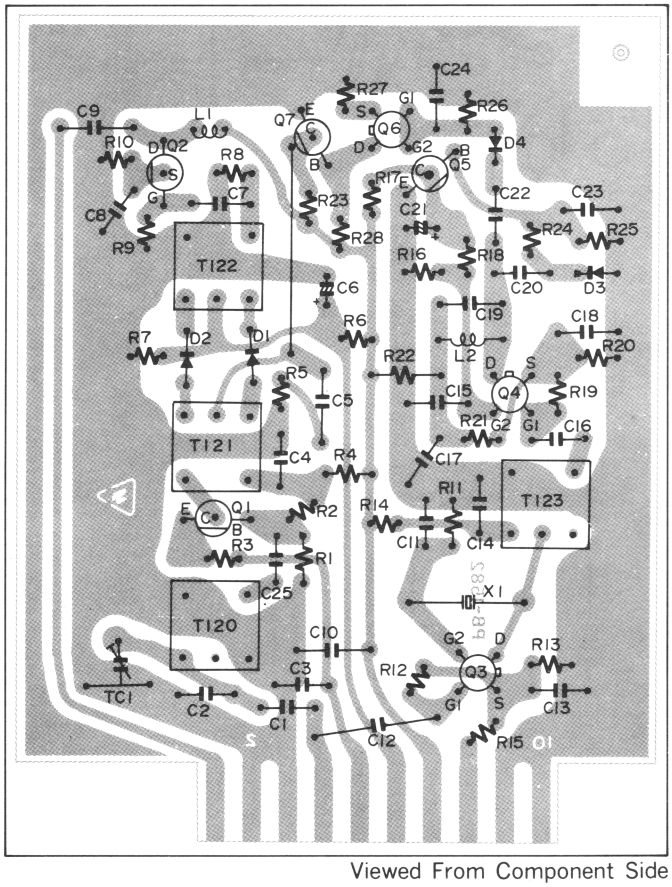
NOISE BLANKER PB-1582

FUNCTIONAL BLOCK DIAGRAM

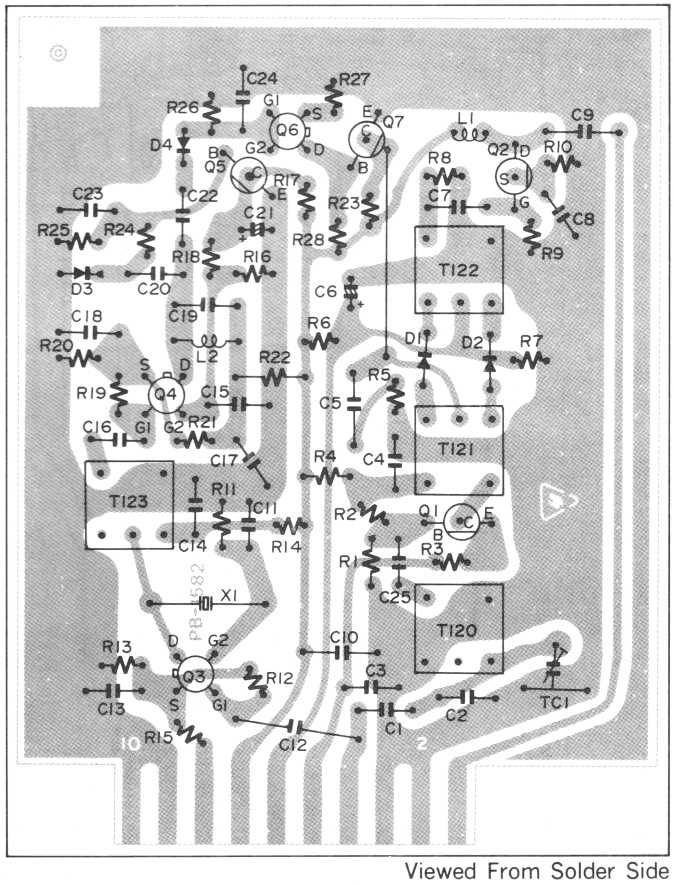


NOISE BLANKER UNIT PB-1582(A~Z)



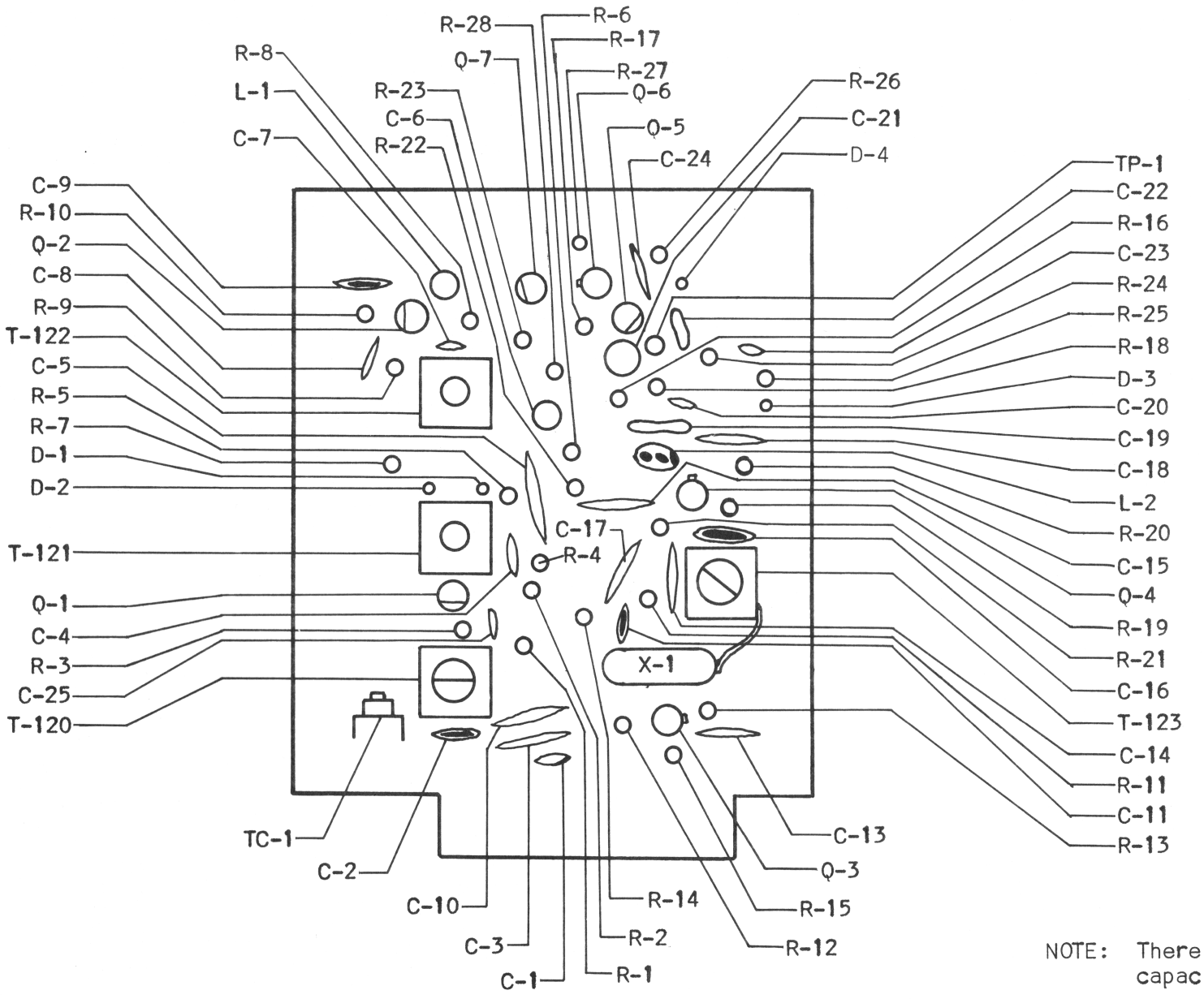


Viewed From Component Side



Viewed From Solder Side

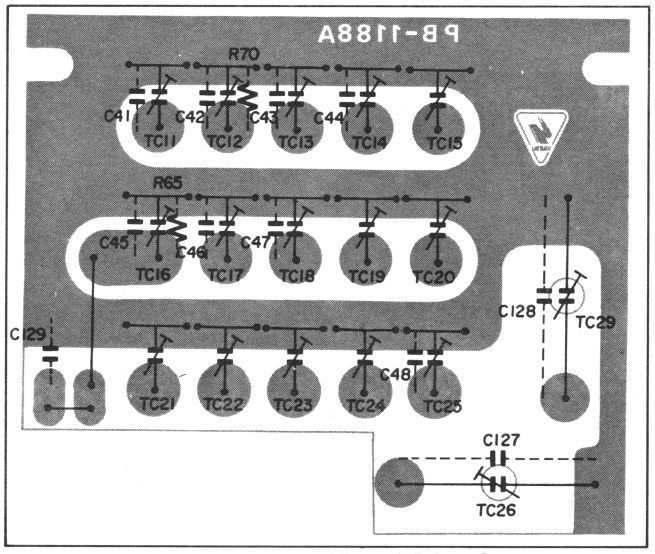
NOISE BLANKER UNIT
PB-1582



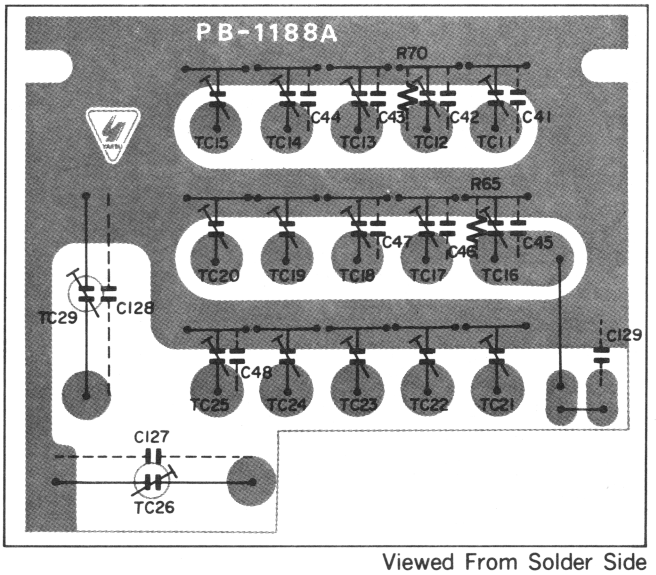
NOTE: There is no C-12 capacitor

MAIN CHASSIS

RF TRIMMER BOARD PB-1188(A~Z)



Viewed From Component Side



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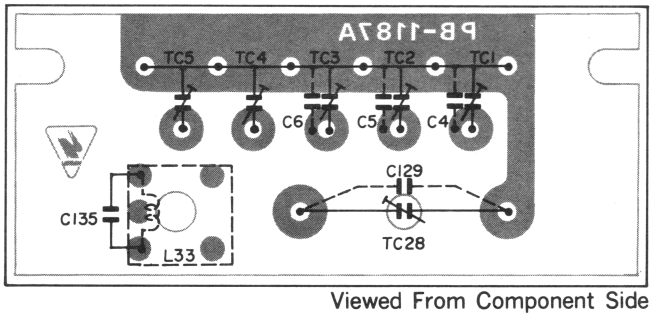
TRIMMER A BOARD PB-1187(A~Z)



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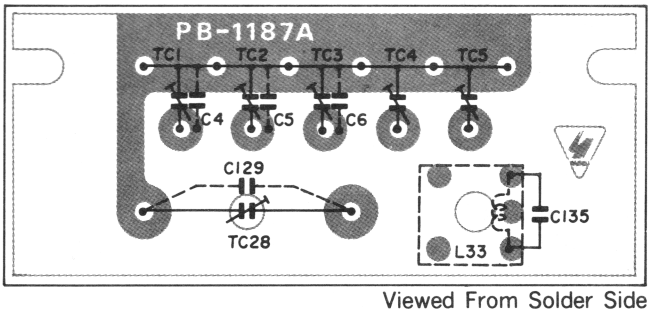
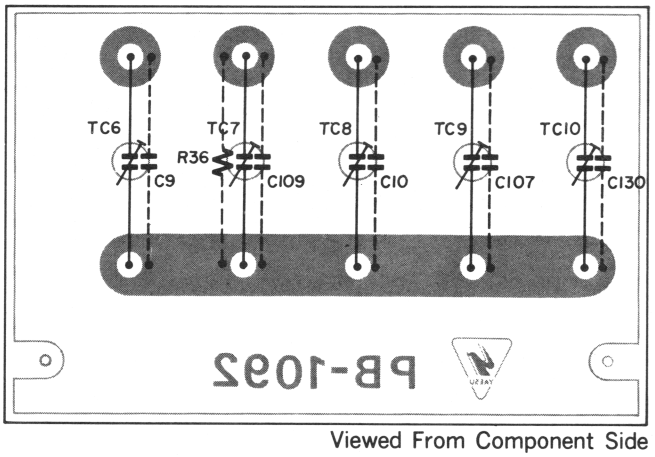
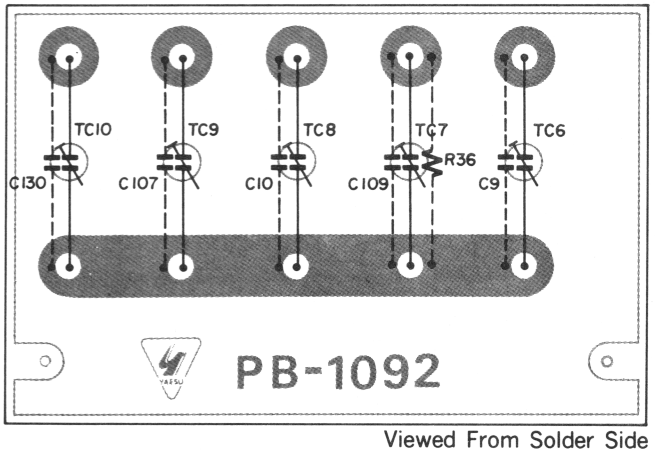


Viewed From Solder Side

TRIMMER B BOARD PB-1092(A~Z)

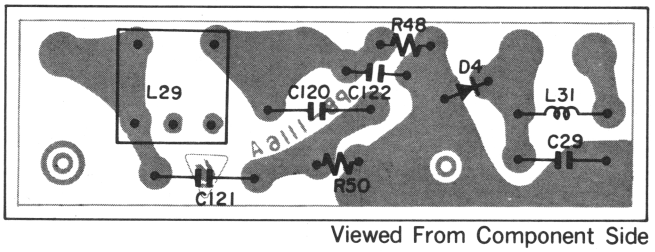


Viewed From Component Side

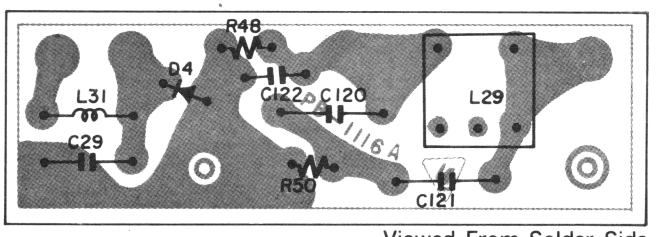


Viewed From Solder Side

ANTENNA TRAP BOARD PB-1116(A~Z)

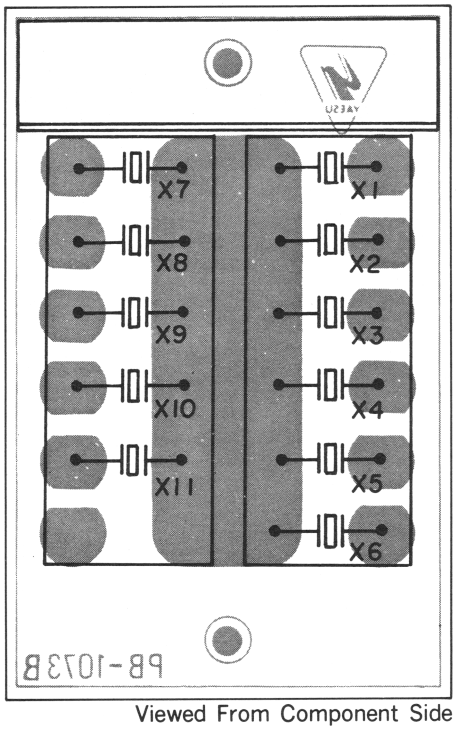


Viewed From Component Side

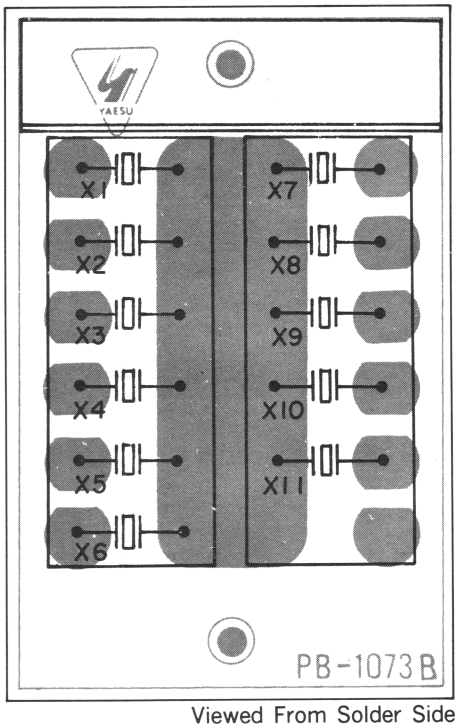


Viewed From Solder Side

CRYSTAL BOARD PB-1073(A~Z)

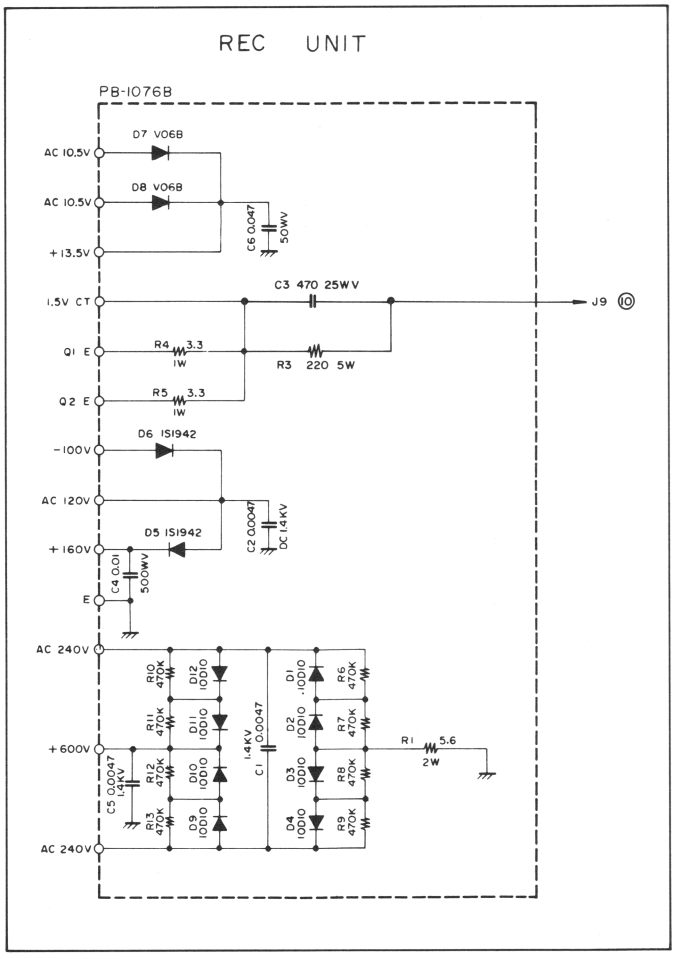


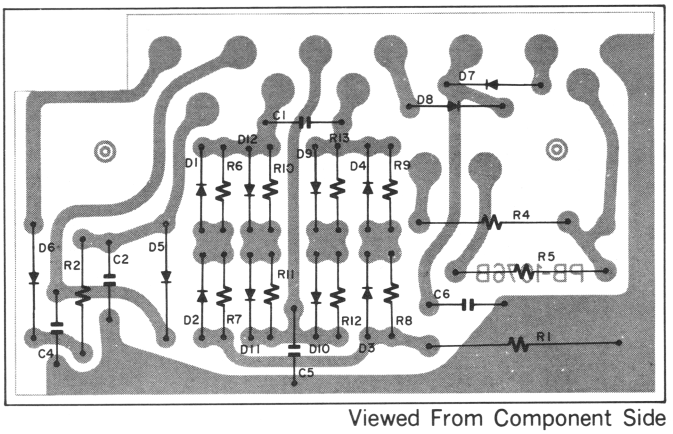
Viewed From Component Side



Viewed From Solder Side

RECTIFIER BOARD PB-1076B





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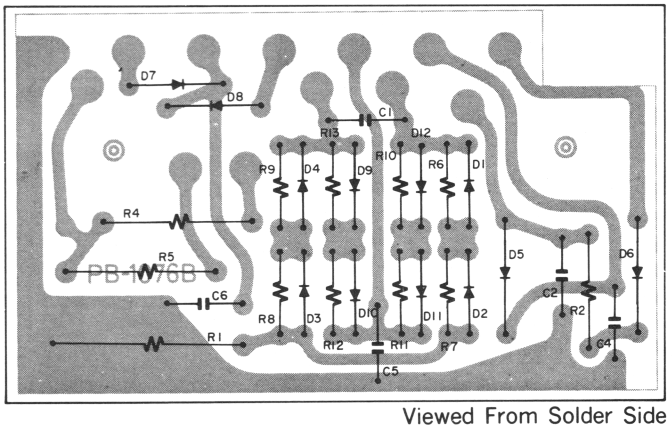
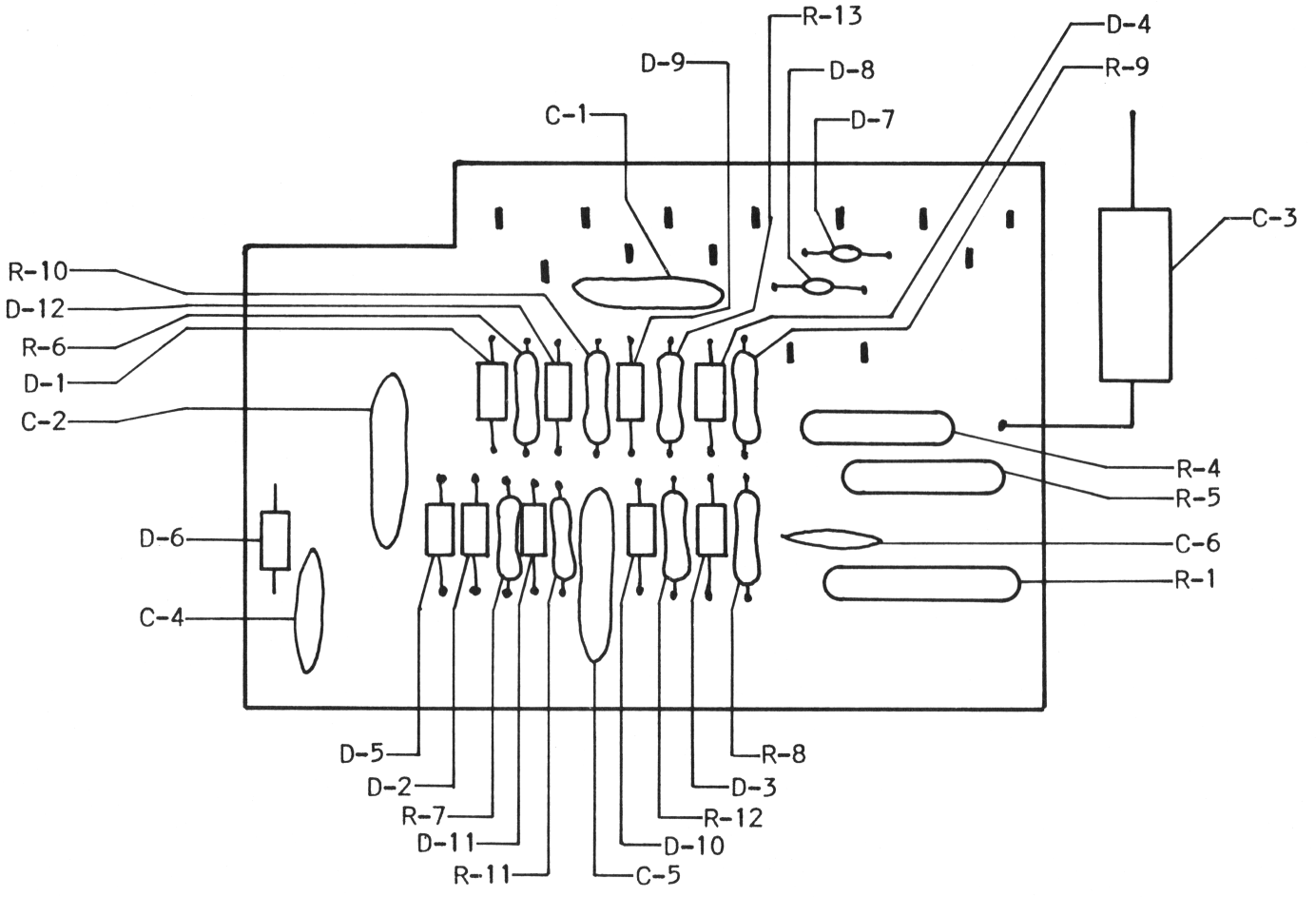


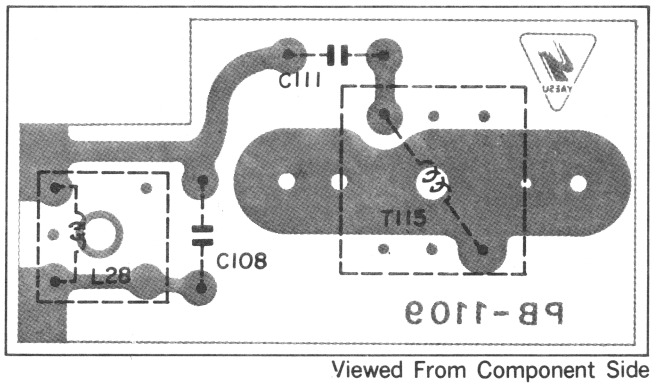
Viewed From Solder Side

RECTIFIER UNIT

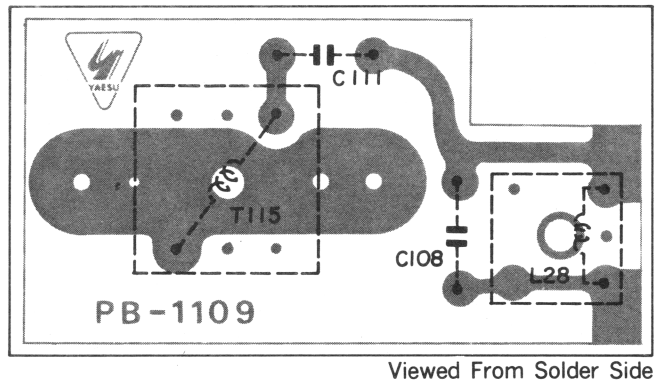
PB-1076B



TRAP BOARD PB-1109(A~Z)

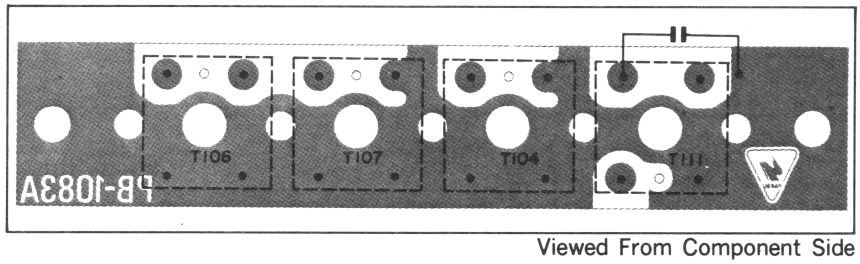


Viewed From Component Side

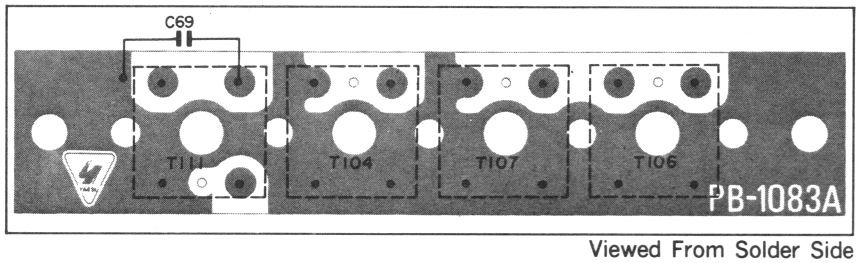


Viewed From Solder Side

COIL BOARD A PB-1083(A~Z)

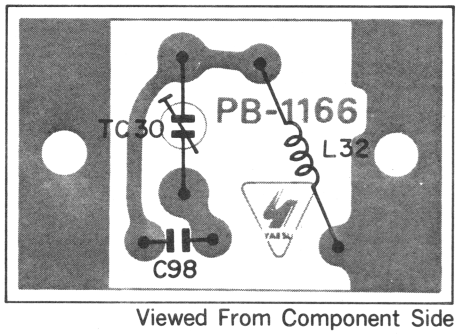


Viewed From Component Side



Viewed From Solder Side

COIL BOARD E PB-1166(A~Z)



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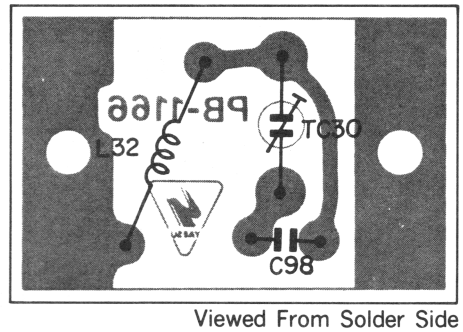
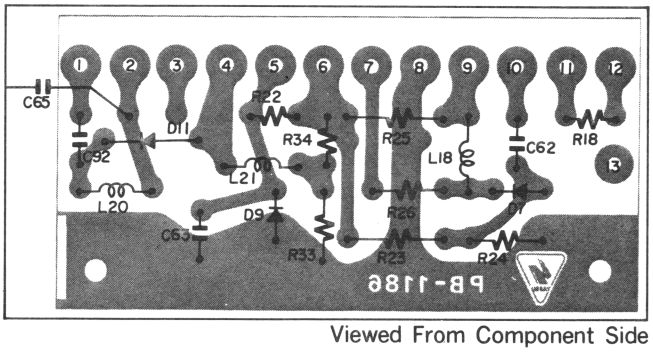


Viewed From Solder Side

DIODE SWITCH BOARD PB-1186(A~Z)



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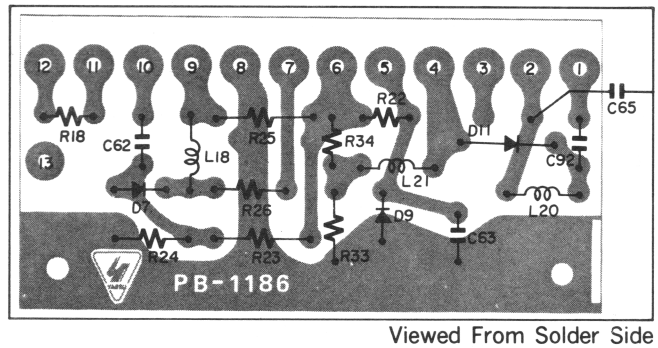

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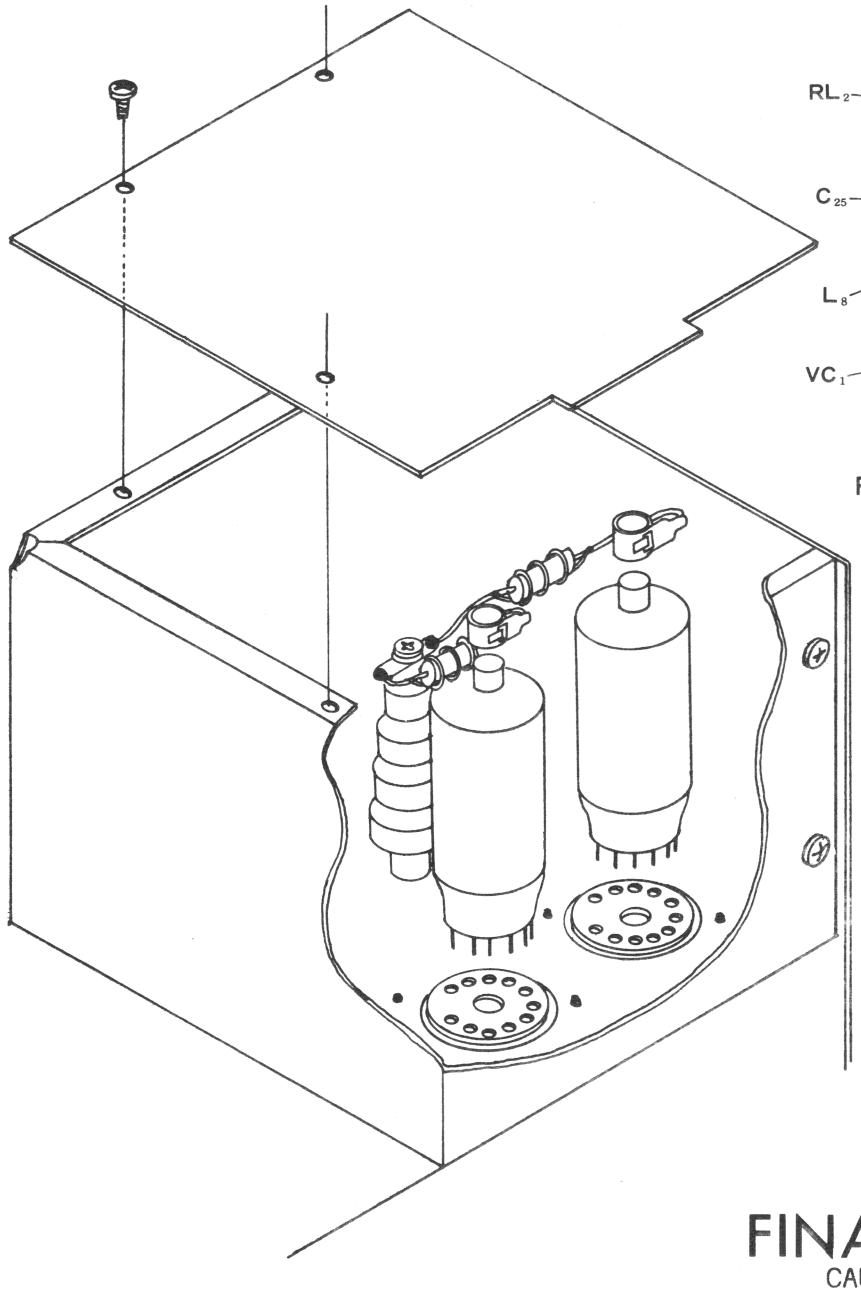
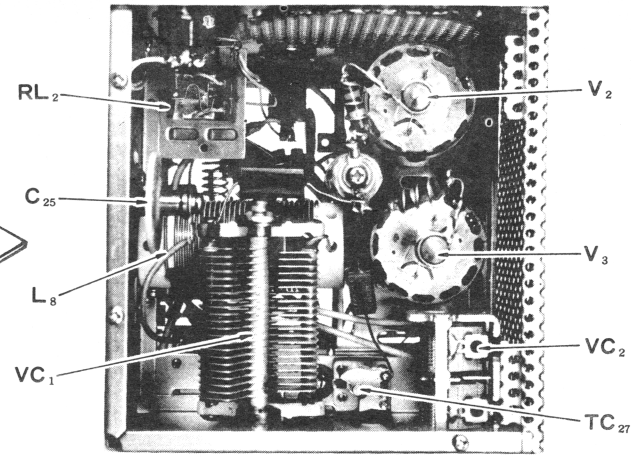
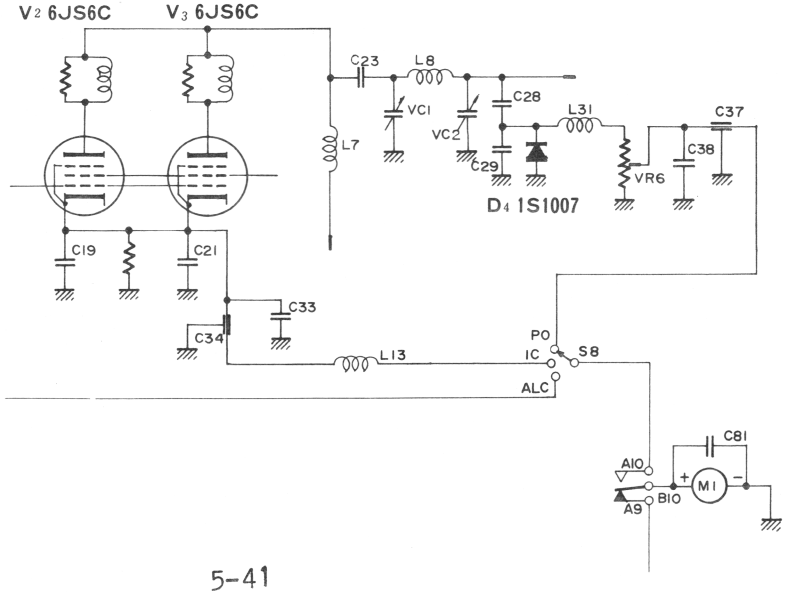




FINAL AMPLIFIER COMPARTMENT

FINAL AMPLIFIER

CAUTION-HIGH VOLTAGE

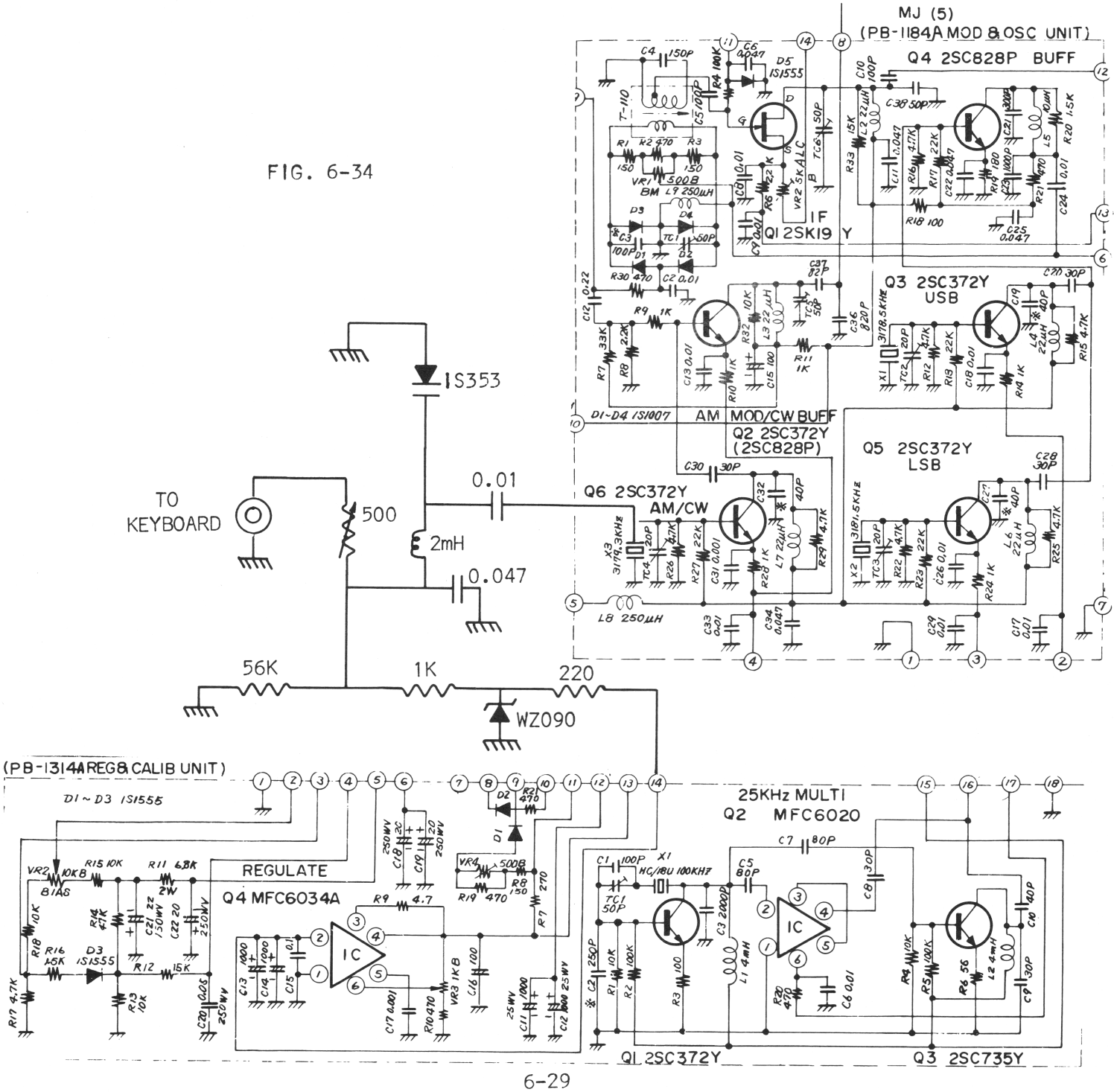


MODIFICATION OF FT-101B, E, EE, OR EX TO ADD FSK CAPABILITY

The circuit is set up for dry keying, and supplies 7.5 volts to a keyboard, or tape reader. (CAUTION: DO NOT APPLY VOLTAGE FROM A KEYER, OR YOU WILL FRY THE COMPONENTS).

Shift is variable 140/850 Hz by setting the 500 ohm pot.

FIG. 6-34



GENERAL

WARNING

DANGEROUS VOLTAGES ARE PRESENT. USE EXTREME CAUTION WHEN WORKING ON THE TRANSCEIVER WITH COVERS REMOVED, AND THE POWER IS ON. DISCHARGE ALL CAPACITORS BY SHORTING TO GROUND AFTER REMOVING THE POWER, TO AVOID BEING SHOCKED BY A FULLY CHARGED CAPACITOR, WHEN YOU LEAST EXPECT DANGER.

The transceiver was carefully aligned and tested at the factory, however, service or replacement of a major component may require subsequent realignment. Don't begin a realignment however, unless the operation of the transceiver is fully understood, the malfunction has been analyzed and definitely traced to misalignment.

Service work should be performed by experienced personnel, using the proper test equipment, however, careful reading of this manual will usually result in a successful job.

Capacitors, resistors, inductors, and transformer adjustments should not be varied more than a few degrees in either direction from their original setting. If the adjustments require varying by an appreciable amount, check for the presence of a defect other than alignment.

CAUTION

NEVER OPERATE THE TRANSCEIVER IN THE TRANSMIT MODE WITHOUT A MATCHED ANTENNA OR ADEQUATE DUMMY LOAD. THE POWER AMPLIFIER TUBES AND PI NETWORK COMPONENTS CAN BE DAMAGED IF THE TRANSCEIVER IS OPERATED WITHOUT THE PROPER LOAD TERMINATION.

EQUIPMENT REQUIRED:

1. RF Signal Generator: Hewlett-Packard Model 606A, or equivalent with one volt output at an impedance of 50 ohms and a frequency coverage to 30 mHz.

2. Vacuum Tube Voltmeter (VTVM): Hewlett-Packard Model 410B, or equivalent VTVM with an RF probe good to 40 mHz.

3. Dummy Load: Yaesu YP-150 or equivalent 50 ohms non-reactive load rated at 150 watts CW power.

4. AF Signal Generator: Hewlett-Packard Model 200 AB or equivalent.

5. A General Coverage Receiver covering the frequency range from 3 to 30 mHz with a 100 kHz calibrator. FRG-7, FR-101 or equivalent.

6. Frequency Counter, Yaesu YC-355D or equivalent.

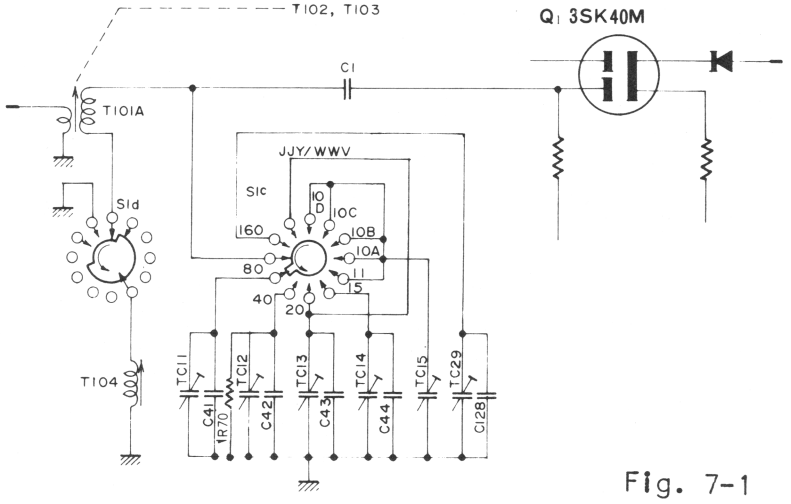
ALIGNMENT OF TRANSMITTER MIXER/DRIVER AND RECEIVER FRONT END STAGES

The final amplifier bias adjustment must be set to 60 ma before extensive operation of the transmitter is attempted. It is assumed that the signal generating stages of the transceiver are functioning properly. You can use the internally generated signal of the transceiver to align the transmitter mixer and driver stages, and the RF signal generator to align the receiver front end stage.

We will start at the highest frequency of the rig, and align the transmitter section, then without moving the preselector, align the re-receiver so it peaks at the same point. If you get a rig where Tx and Rx do <u>not</u> peak at the same point, chances are good that re-alignment in accordance with this procedure will cure your difficulty.

Then, we will align the various traps, and set the adjustments. If you work carefully, your FT-101 will emerge from the alignment meeting all factory specifications.

Remove the covers, and read through the procedure, so you understand the system we will be using, and where the alignment points are located.



RF INPUT CIRCUIT

BAND	COIL	CAPACITOR	TRIMMER
160	T101A + T104	C128 820 PF	TC29
80		C41 240	TC11
40		C42 30P	TC12
20	T101A	C43 50 PF	TC13
15		C44 20 PF	TC14
10			TC15

Fig. 7-1

NOTE: See Fig.1-4 in Section 1 for the test setup <u>we</u> use.

1. Connect a 50 ohm non-reactive dummy load to the antenna jack. Tune up the transceiver at 30,000 kHz (BAND 10D, VFO at 30,000 kHz) as follows:

   a. Set the BAND switch to 10D, the VFO to 30,000 kHz, PRESELECTOR control to the upper end of 10 and 11 meter segment and the OPERATION switch at MOX. Don't leave it in the MOX position for more than 10 seconds at a time until it is in resonance!

b. Advance the CARRIER control and tune the final amplifier.

c. Don't exceed a resonant plate current (IC) of 100 ma. Use the CARRIER control to adjust it up or down as required.

d. Locate and set trimmer TC5 (Fig. 7-2 , bottom) to the mid-capacitance position (Fig. 7-2). Soften the glue holding the spring shafts, and adjust the slugs of T102 and T103 (part of the PRE-SELECTOR gang on top of the chassis) for maximum output into the dummy load.

e. After you have peaked T102 and T103, reduce the transmitter output to zero with the CARRIER control, and switch off the MOX.

2. Set the OPERATION switch to PTT, RF and AF GAIN control to maximum, CLARIFIER control to "OFF", and NOISE BLANKER to "OFF". Do not change the VFO setting and PRESELECTOR control setting set up in step 1. Tune the RF signal generator to 30,000 kHz and adjust it for approximately 1,000 Hz beat note. Use just enough signal generator output (approximately 1 microvolt for an aligned unit) to keep from developing AGC voltage (no S-meter indication). Set trimmer TC15 to the mid-capacitance position. Adjust the slug of T101 for maximum audio output without developing AGC voltage. Reduce the signal generator output as required, to prevent developing AGC.

the signal generator and re-connect the dummy load.

3. Set the BAND switch at 10A, the VFO at 28,000 kHz and the "MOX-PTT-VOX" switch at MOX. Advance the CARRIER control and tune the final amplifier. Maintain the plate current at 100 ma with the CARRIER control as described before.

Now set the PRESELECTOR control to the lower end of the 10 and 11 meter segment marked in the panel, and re-adjust trimmer TC5 for maximum output at the dummy load. After you have set it at the peak, reduce the transmitter output to zero with the CARRIER control, and switch back to PTT.

4. Without changing the VFO or PRESELECTOR control settings, tune the RF signal generator to 28,000 kHz and obtain a 1,000 Hz beat note.

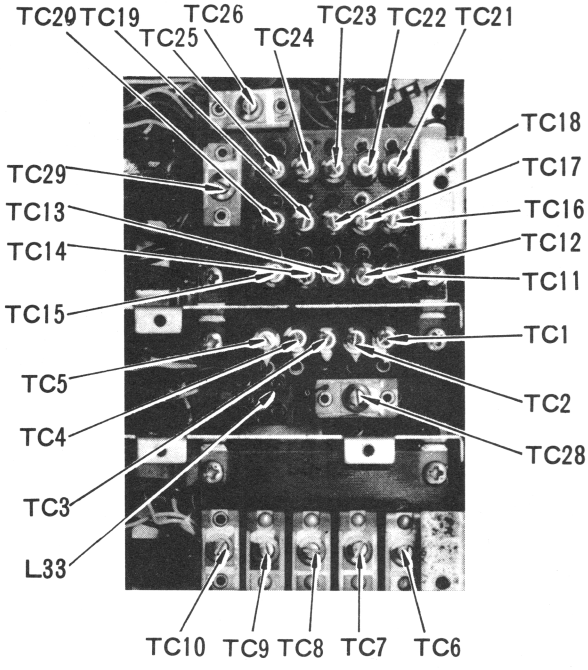
Control the signal generator output as before, to avoid AGC action and adjust trimmer TC15 for maximum audio output as described in step 2.

5. Repeat steps 1,2,3 and 4 to peak out the coil adjustments for the 10 meter band.

6. So now you have the 10 meter (and that includes 11 meter) band aligned. Set the BAND switch to 15, the VFO to 21,000 kHz and the PRESELECTOR to the lower edge of the 15 meter segment. Tune up the transceiver to 21,000 kHz as described above. Adjust trimmers TC4 and TC9 for maximum transmitter output into the dummy load.

7. After you have peaked TC4 and TC9, set the OPERATION switch to PTT, and without changing the VFO or PRESELECTOR settings, tune the RF signal generator to 21,000 kHz and obtain the 1,000 Hz beat note. Adjust trimmer TC14 for maximum audio output as described in step 2.

8. Repeat the procedures given in steps 6 and 7 on the 20 meter band. Trimmers TC3 and TC8 are used for maximum transmitter output and TC13 for maximum audio output in receive.



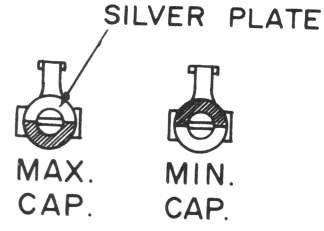
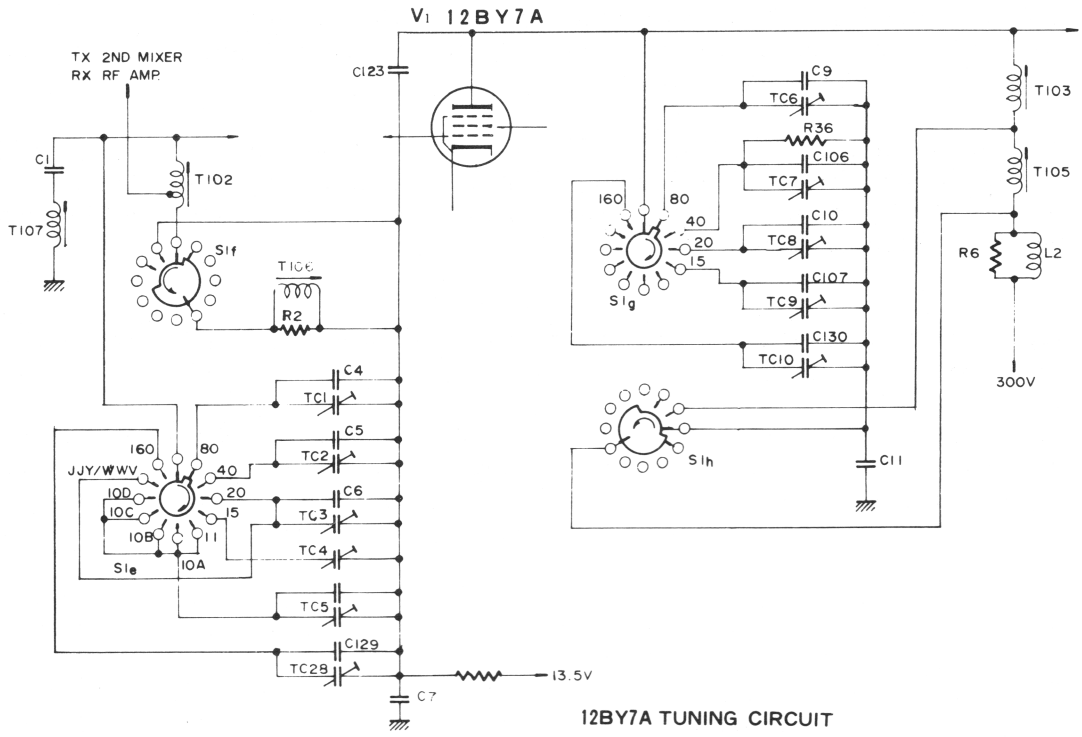


Fig. 7-2

9. Set the BAND switch at 80, VFO at 4,000 kHz, and the PRESELECTOR at 7 of the inner scale. Pre-set TC1 and TC6 at their mid-capacitance point. Then tune the transceiver to 4,000 kHz and adjust T105 and T106 for maximum transmitter power output into the dummy load.

10. Set the OPERATION switch to PTT, and without changing the VFO or PRESELECTOR settings, tune the RF signal generator to 4,000 kHz and obtain a 1,000 Hz beat note. Pre-set TC11 to the mid-capacitance point. Adjust T104 for maximum audio output as described in step 2. T104 takes a nylon hex alignment tool, and is held in position with wax. See Fig.7-6 for it's location, and don't forget to soften the wax before trying to turn it. We see many cracked cores from absent-minded servicemen!



12BY7A TUNING CIRCUIT

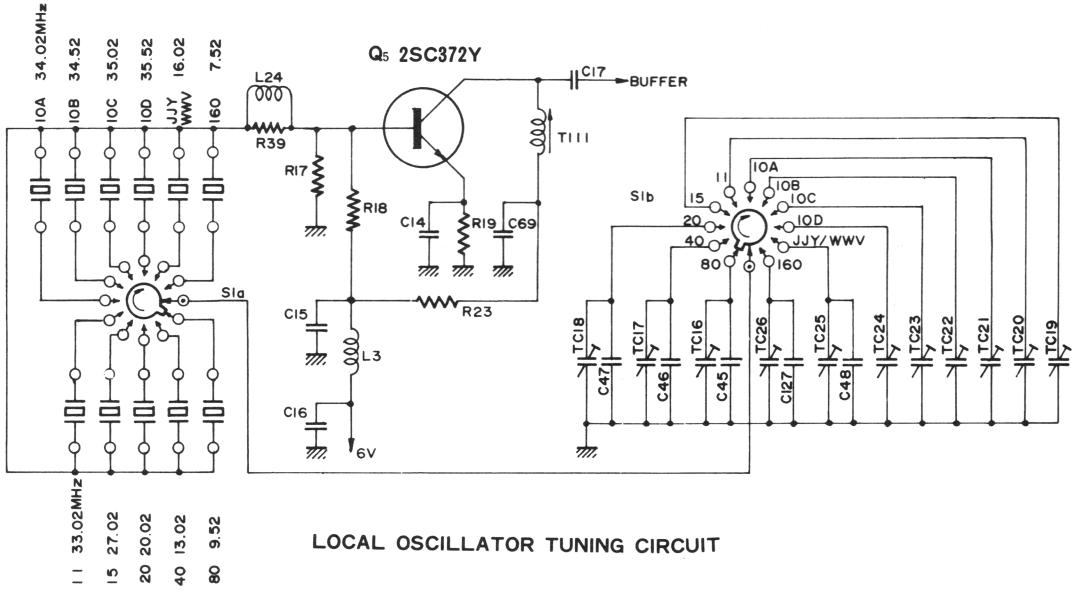
BAND	GRID CIRCUIT			PLATE CIRCUIT		
	COIL	CAPACITOR	TRIMMER	COIL	CAPACITOR	TRIMMER
160	T102+T106	C129 820P	TC28	T103+T105	C130 820P	TC10
80		C4 200P	TC1		C9 200P	TC6
40		C5 30P	TC2		C106 30PF	TC7
20	T102	C6 50PF	TC3	T103	C10 50PF	TC8
15			TC4		C107 10PF	TC9
10			TC5			

Fig. 7-3

HETERODYNE CRYSTAL OSCILLATOR ALIGNMENT

The heterodyne crystal oscillation injection may be checked in the following manner. Connect the VTVM RF probe to the local oscillator test point. Injection is normal if the injection voltage measures 0.3 volt RMS on all bands.

If not, alignment is required. Set the BAND switch at 10D, TC24 at 1/3 capacitance position, and adjust T111 for 0.3 volt RMS reading on VTVM. Then adjust TC23, TC22, TC21, TC16 and TC26 for each of the band to read 0.3 volt RMS on VTVM.



LOCAL OSCILLATOR TUNING CIRCUIT

Fig. 7-4

BAND	No.	TUNING CAPACITOR		CRYSTAL FREQUENCY
160	X11	C127 250PF	TC26	7.52MHz
80	X 1	C45 300PF	TC16	9.52MHz
40	X 2	C46 150PF	TC17	13.02MHz
20	X 3	C47 50PF	TC18	20.02MHz
15	X 4		TC19	27.02MHz
11	X 5		TC20	33.02MHz
10A	X 6		TC21	34.02MHz
10B	X 7		TC22	34.52MHz
10C	X 8		TC23	35.02MHz
10D	X 9		TC24	35.52MHz
WWV	X10	C48 100PF	TC25	16.02MHz

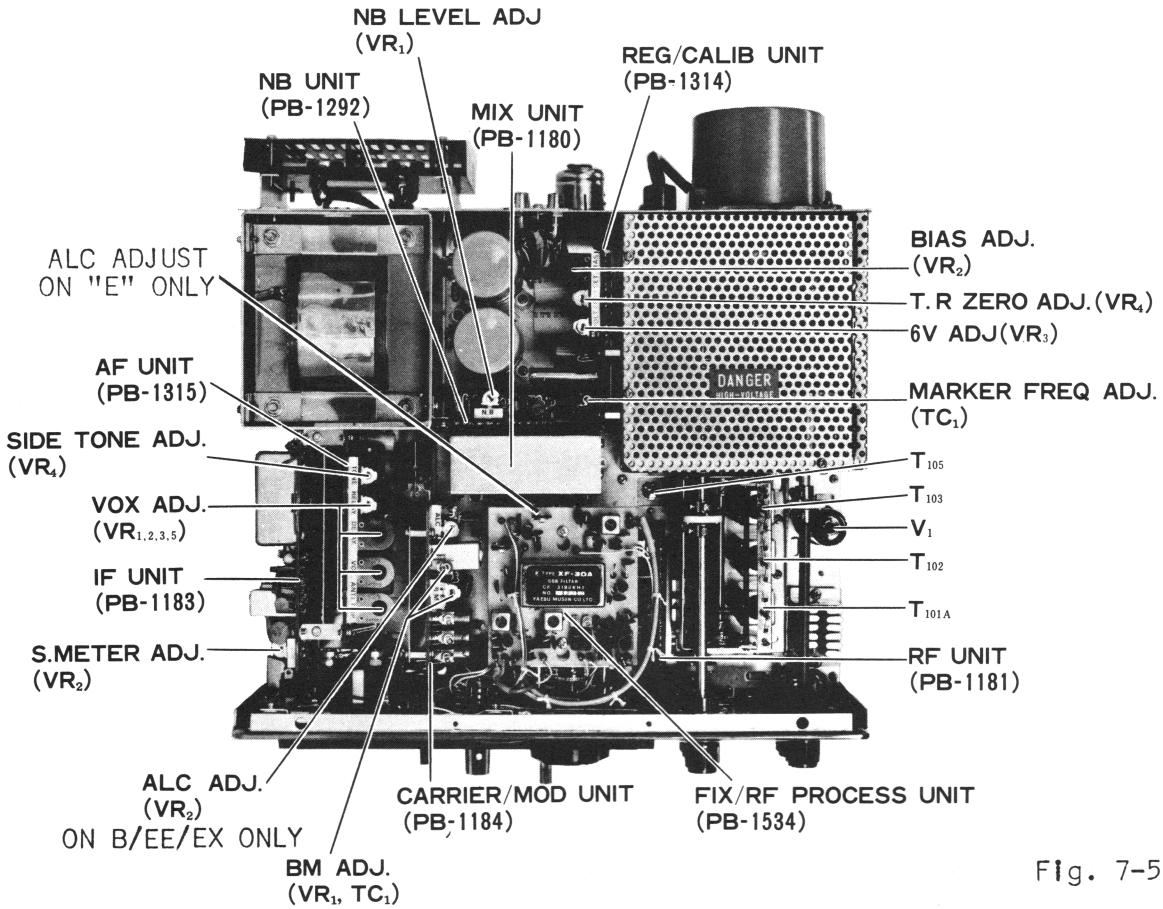


Fig. 7-5

ALIGNMENT POINTS - TOP VIEW

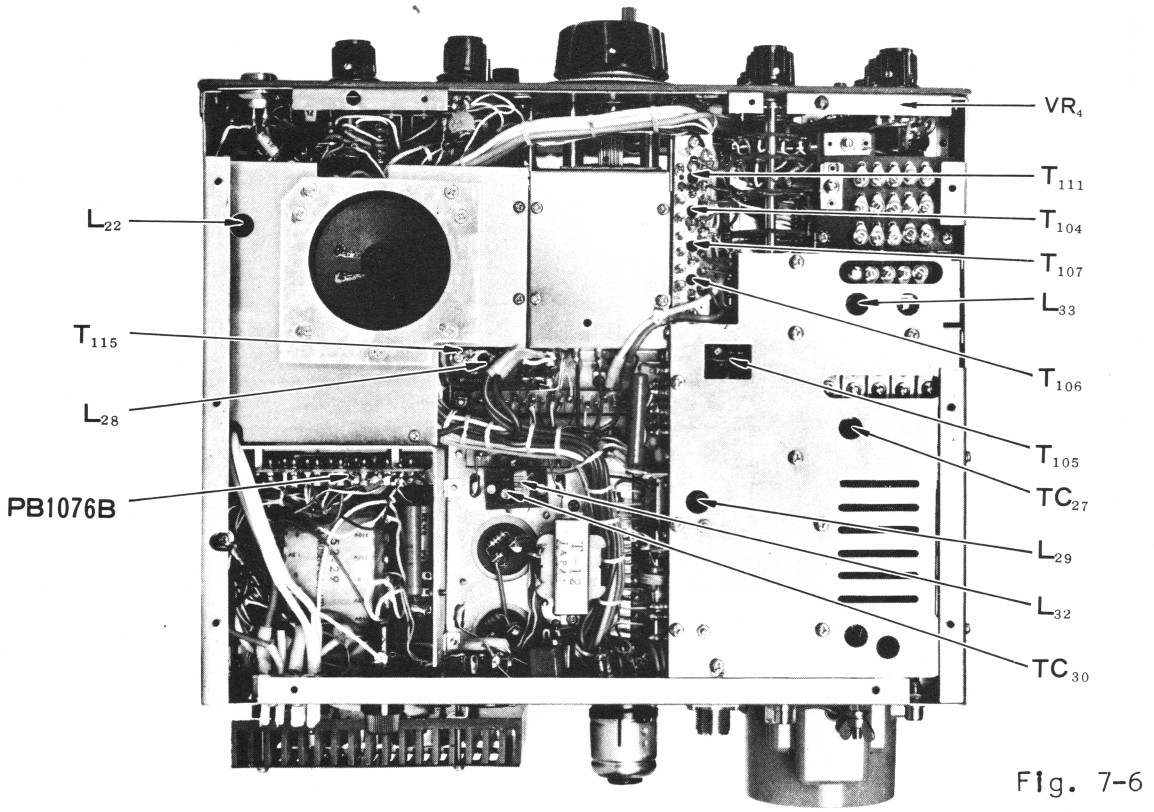


Fig. 7-6

ALIGNMENT POINTS - BOTTOM VIEW

TRIMMER DECK

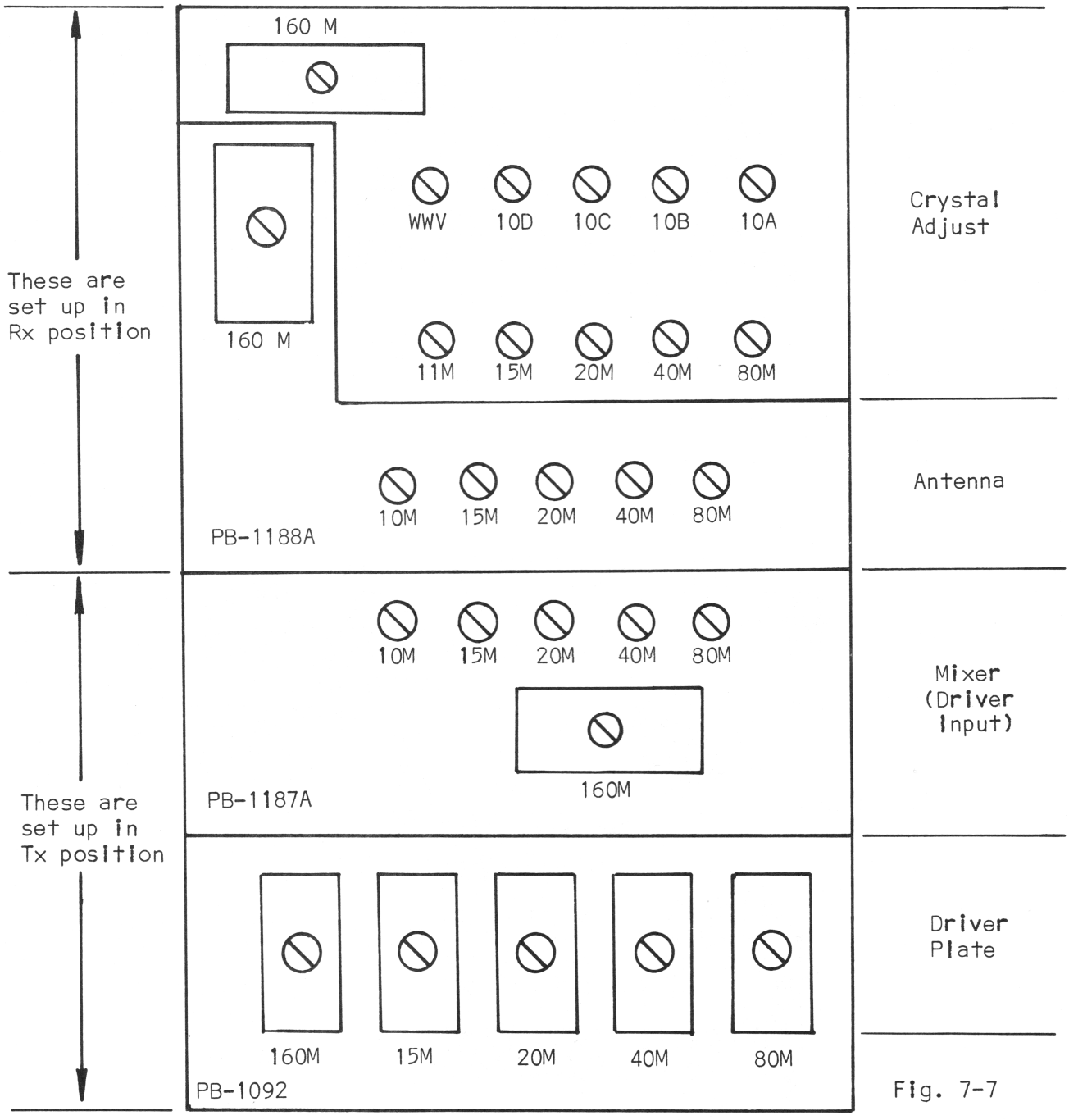
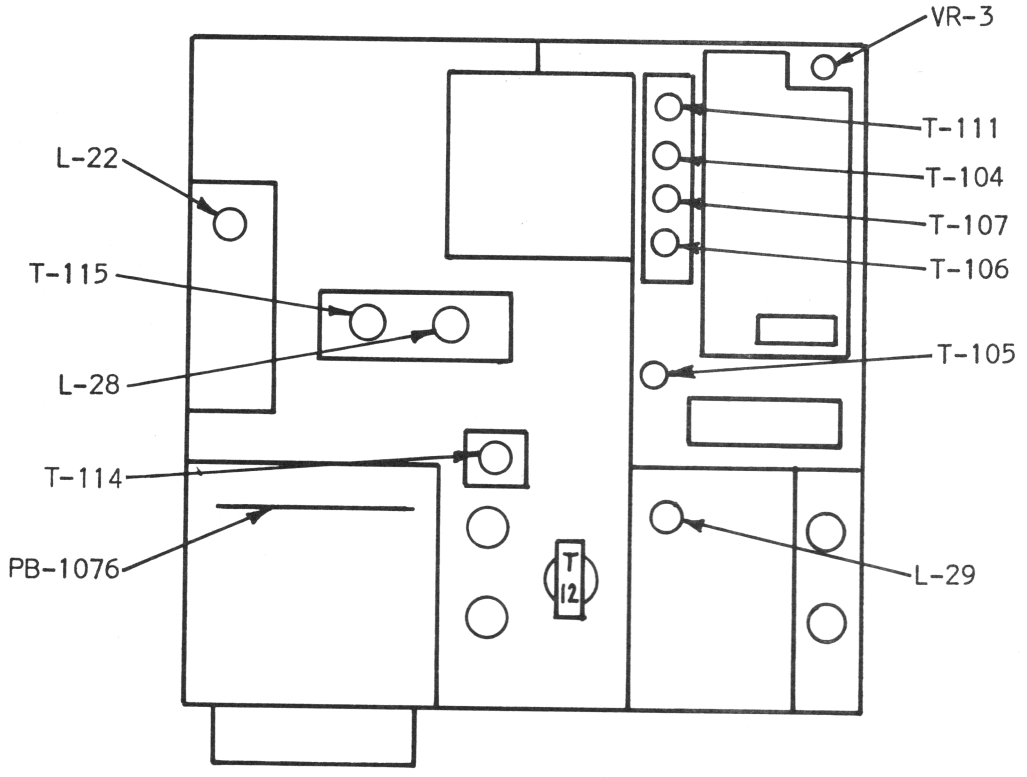


Fig. 7-7

ALIGNMENT POINTS

(BOTTOM VIEWS)



FT-101

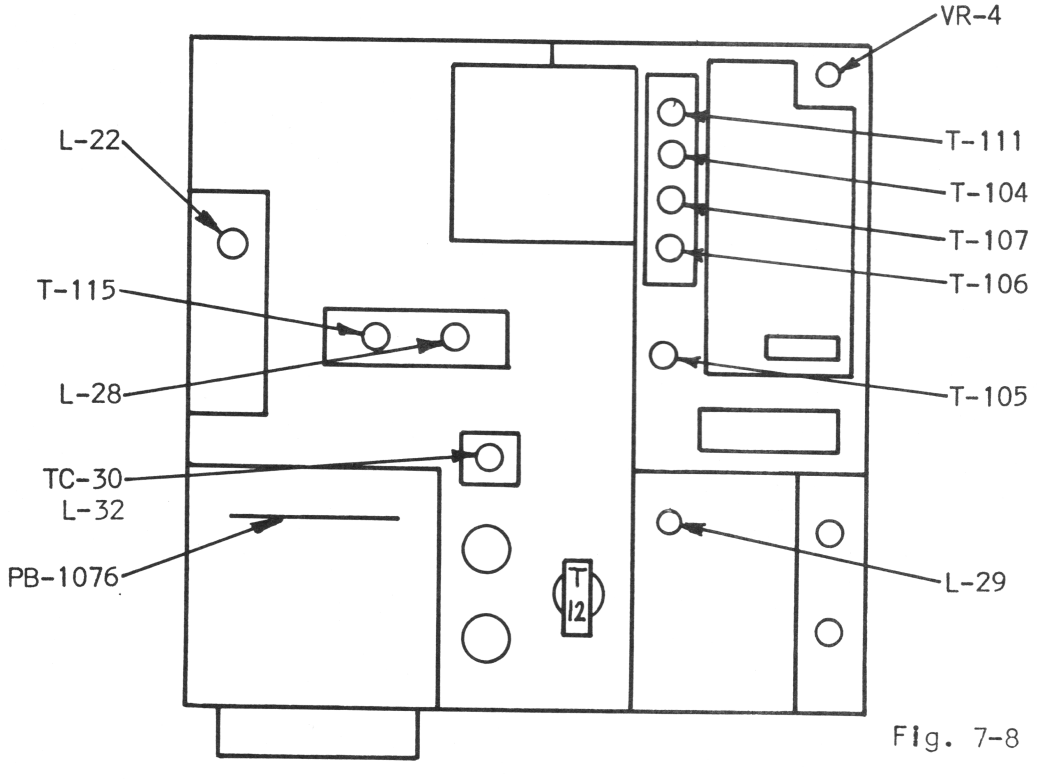


Fig. 7-8

FT-101-B

ALIGMENT POINTS

(BOTTOM VIEW)

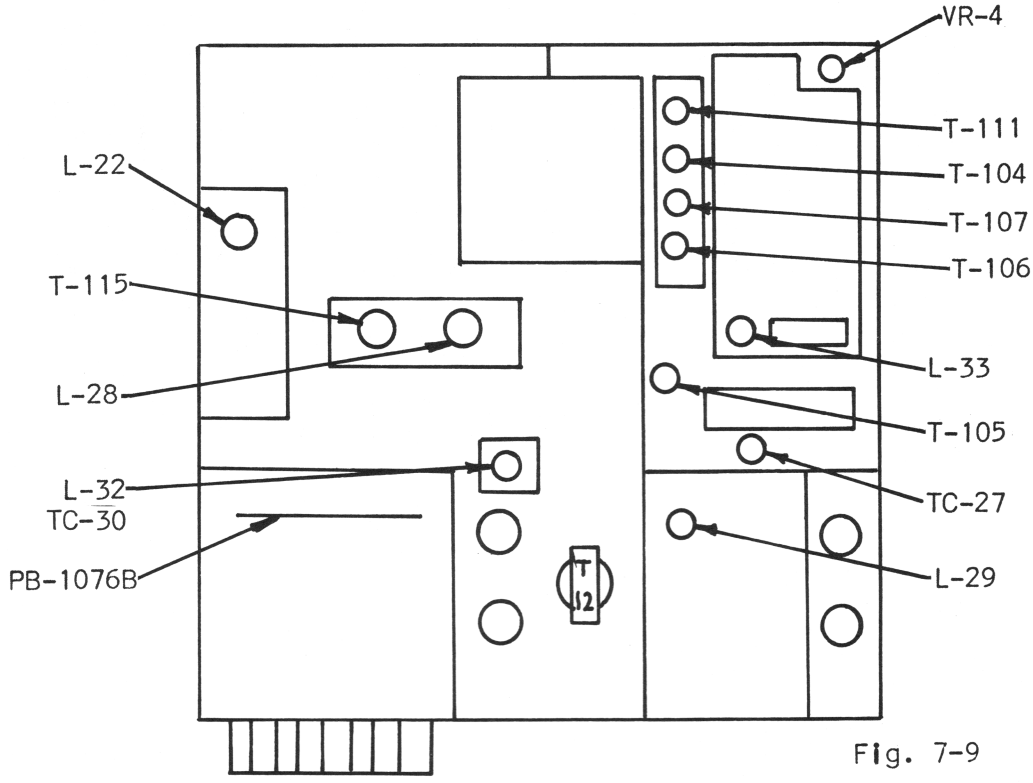


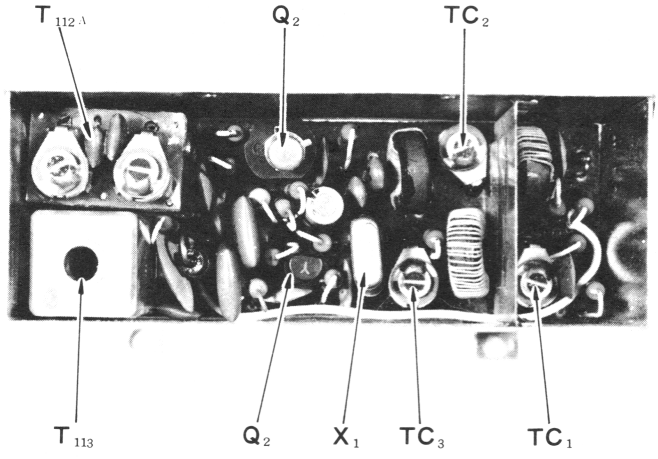
Fig. 7-9

FT-101 E/EE/EX

Finally, go back to step 1, and reset the IC to 200 ma, and check for equal output across the VFO range by tuning up at several spots between 28.5 and 29.0 mHz.

A certain amount of error might be expected if this is your first experience with aligning band pass filters, so work it over carefully, repeating steps 1, 2, and 3 until you have essentially the same power output across the 500 kHz band segment.

The curve you are trying to achieve is shown below in Fig. 7-10.



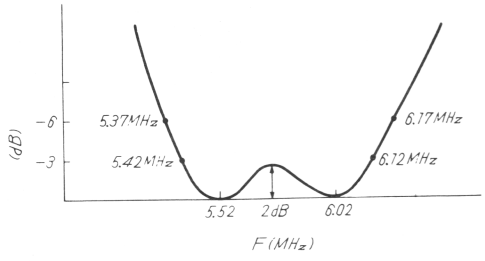
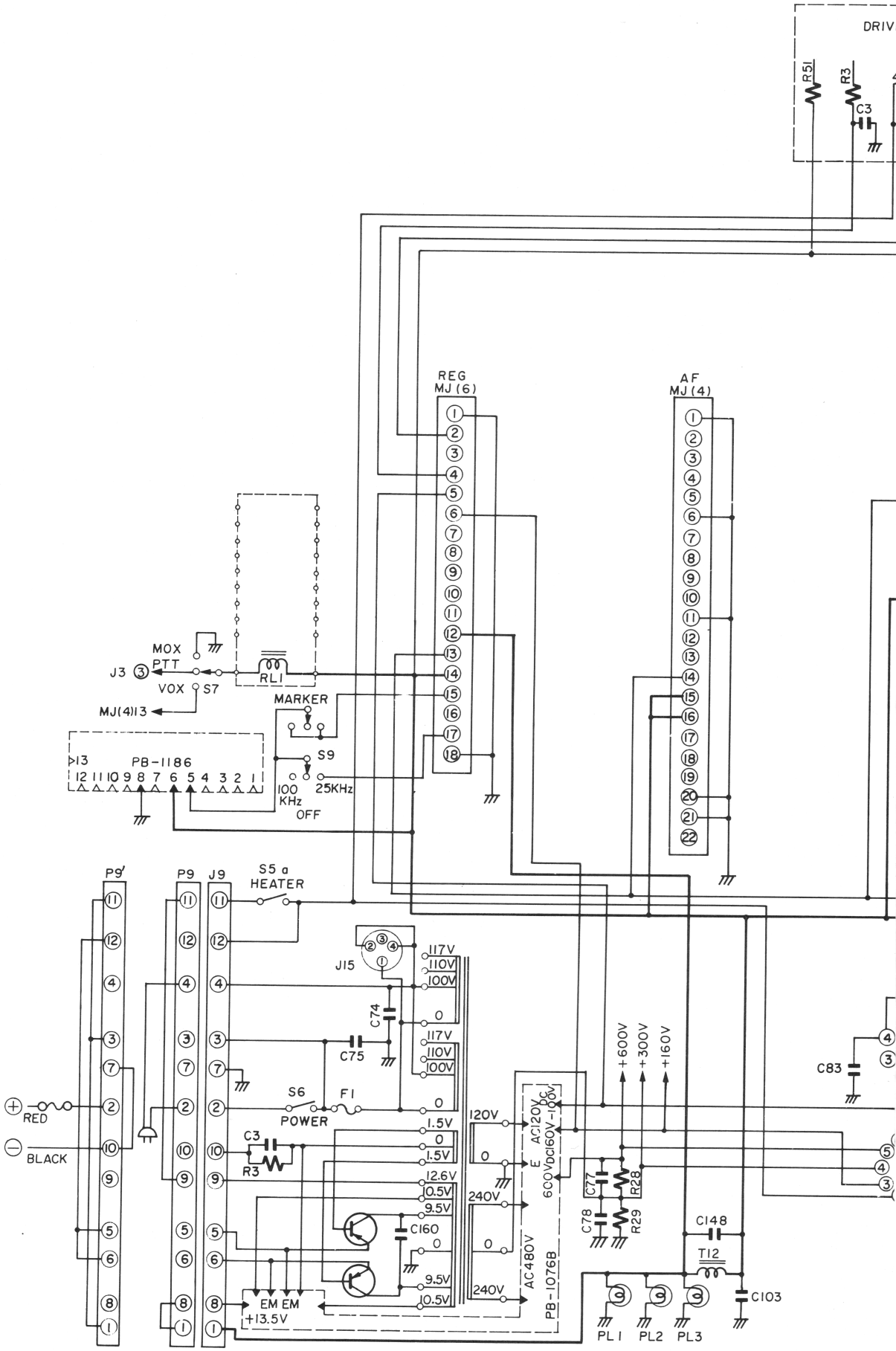
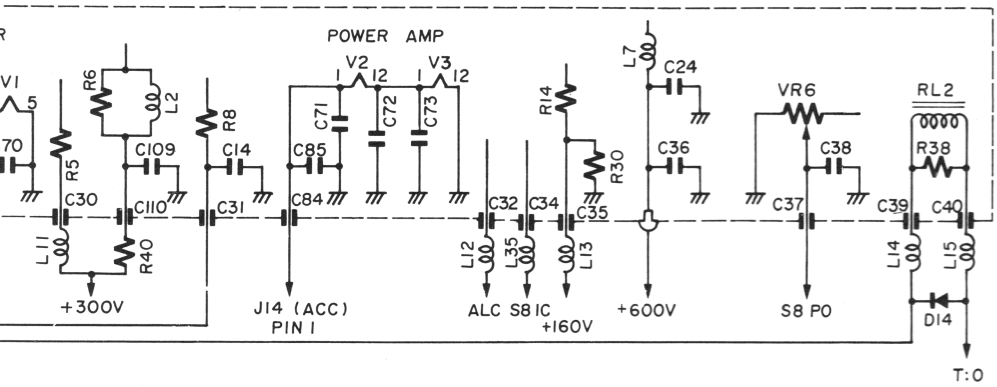
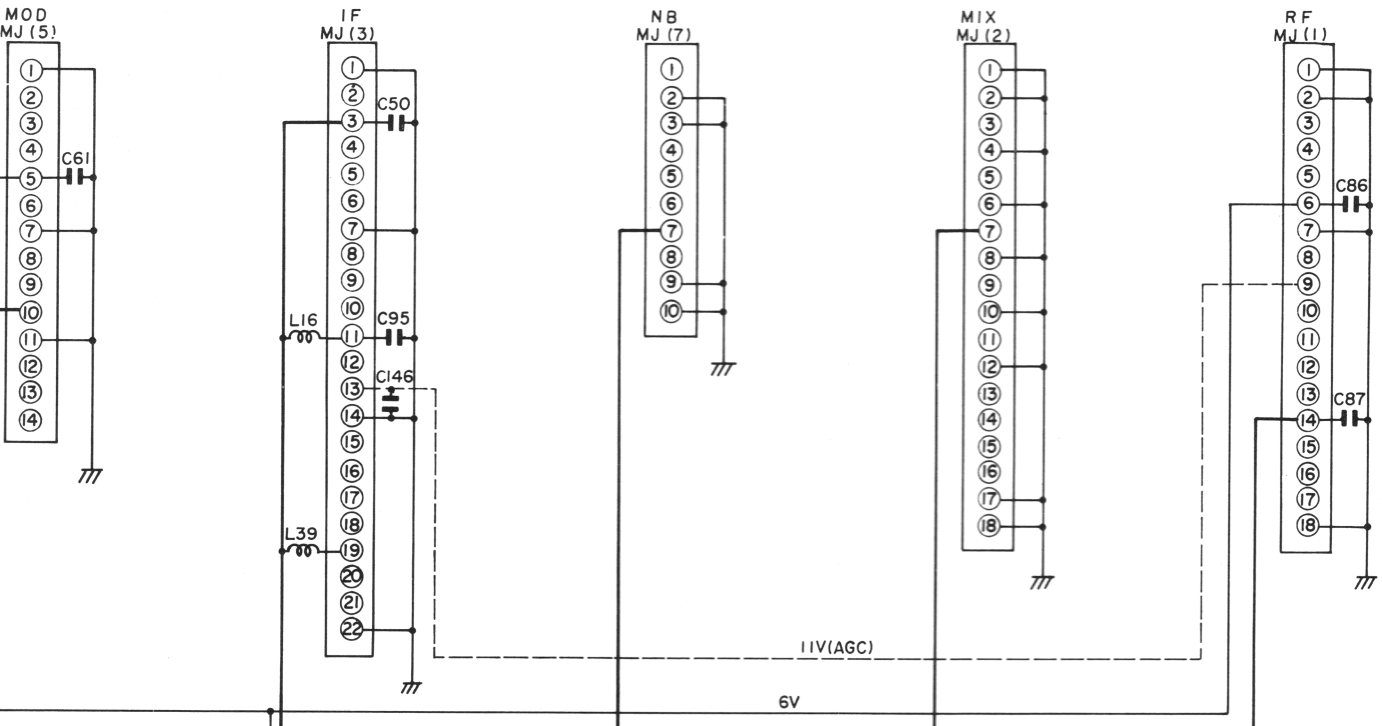


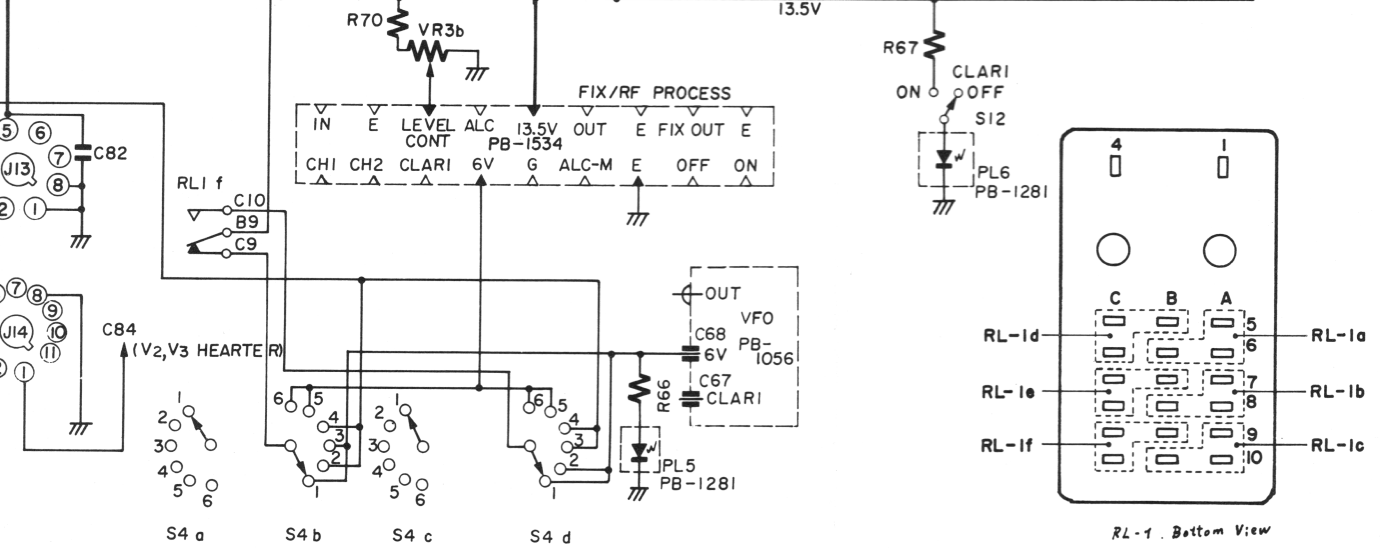
Fig. 7-10

BANDPASS NETWORK CHARACTERISTICS


DRIV
R51
R3
C3
REG
MJ (6)
AF
MJ (4)
MOX
PTT
J3
VOX
S7
RL1
MJ(4)13
MARKER
S9
100
KHz
25KHz
OFF
PB-1186
P13
12 11 10 9 8 7 6 5 4 3 2 1
P9'
P9
J9
S5 a
HEATER
J15
117V
110V
100V
0
C74
C75
S6
POWER
F1
RED
BLACK
1.5V
0
1.5V
C3
R3
12.6V
10.5V
9.5V
C160
0
9.5V
10.5V
EM EM
+13.5V
120V
0
240V
0
240V
AC480V
AC120V
DC160V
-100V
6CCV
E
PB-1076B
+600V
+300V
+160V
C77
R28
C78
R29
C148
T12
C103
PL1
PL2
PL3
C83

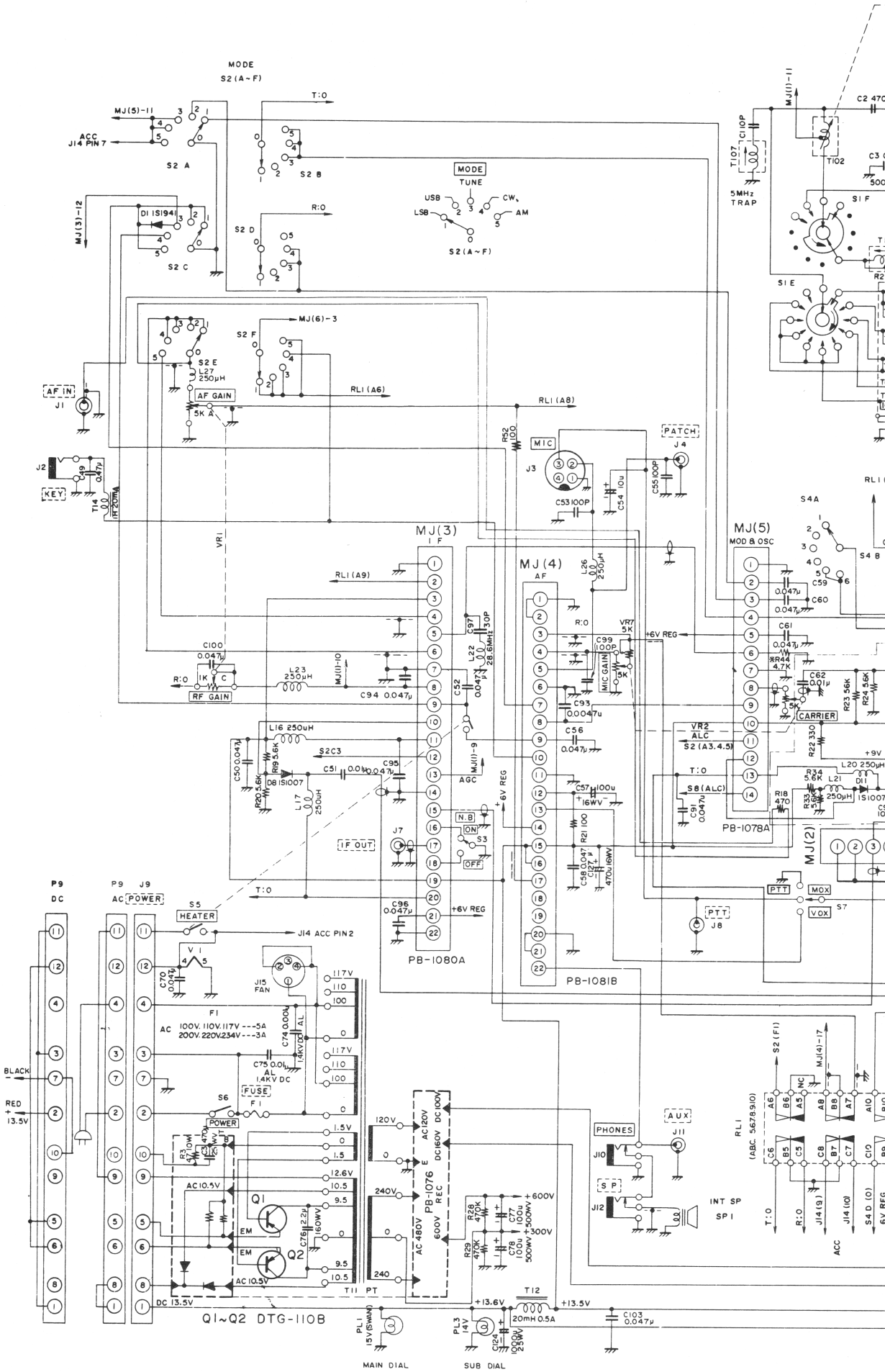


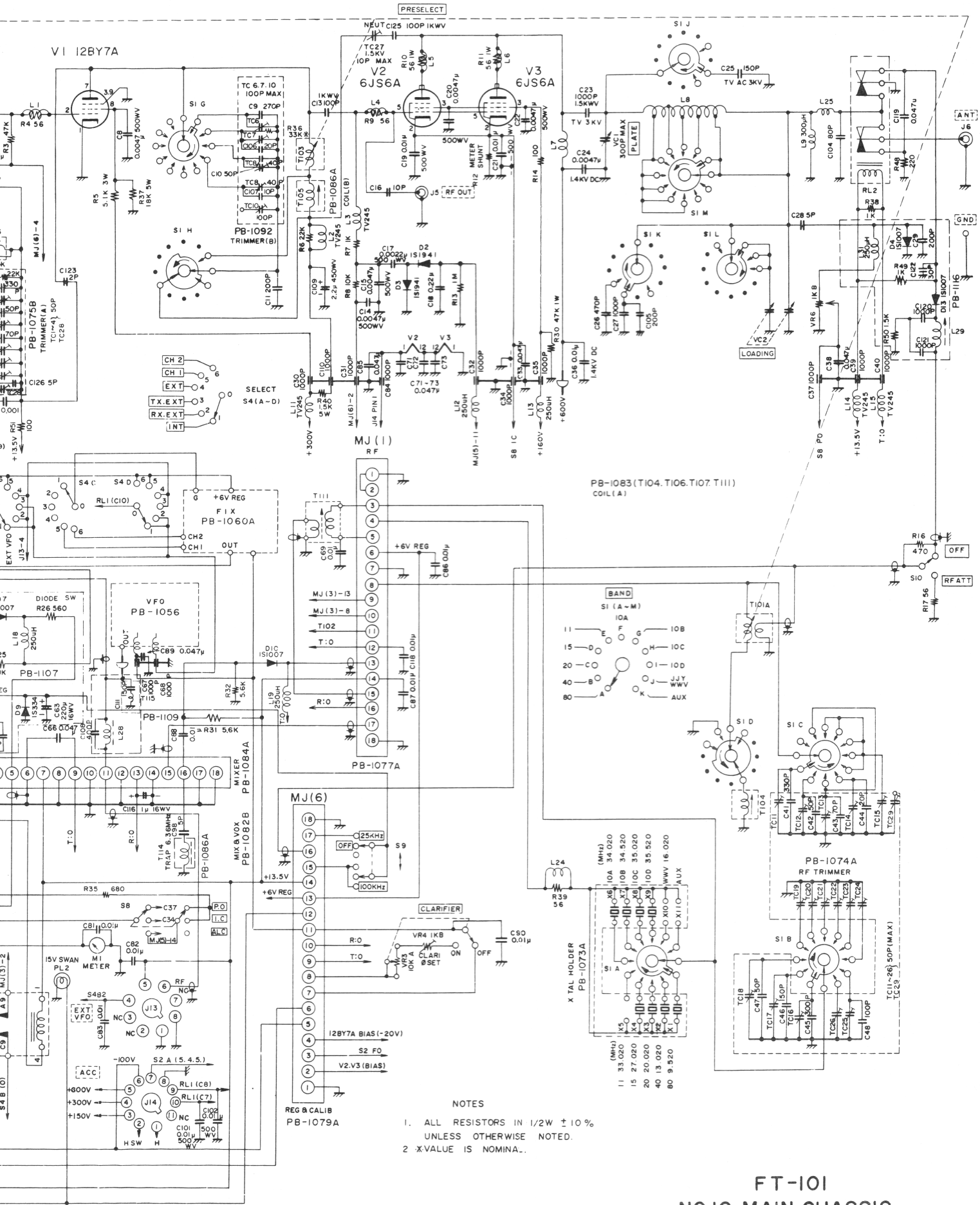




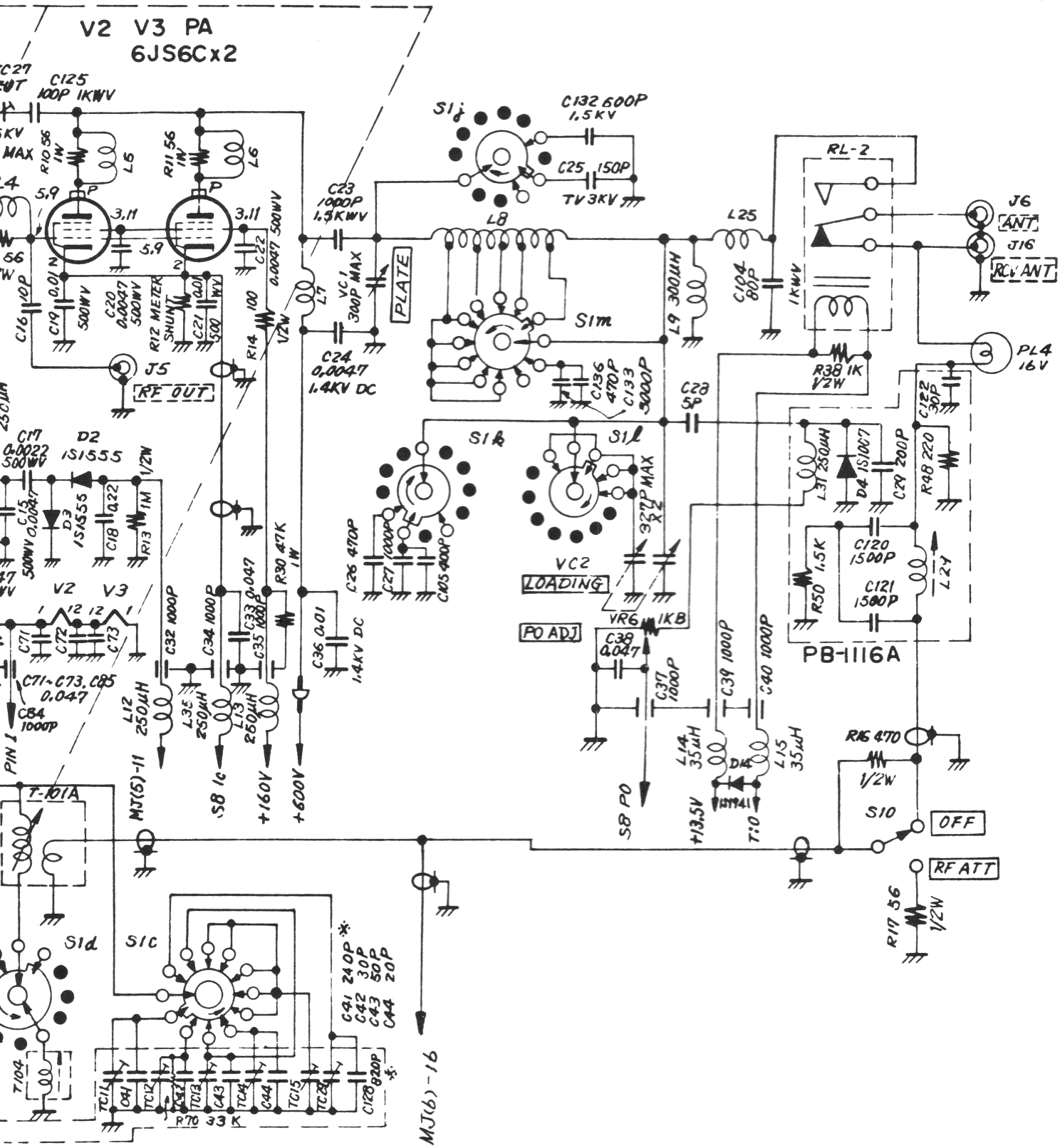
RL-1 . Bottom View

MAIN CHASSIS:
POWER DISTRIBUTION

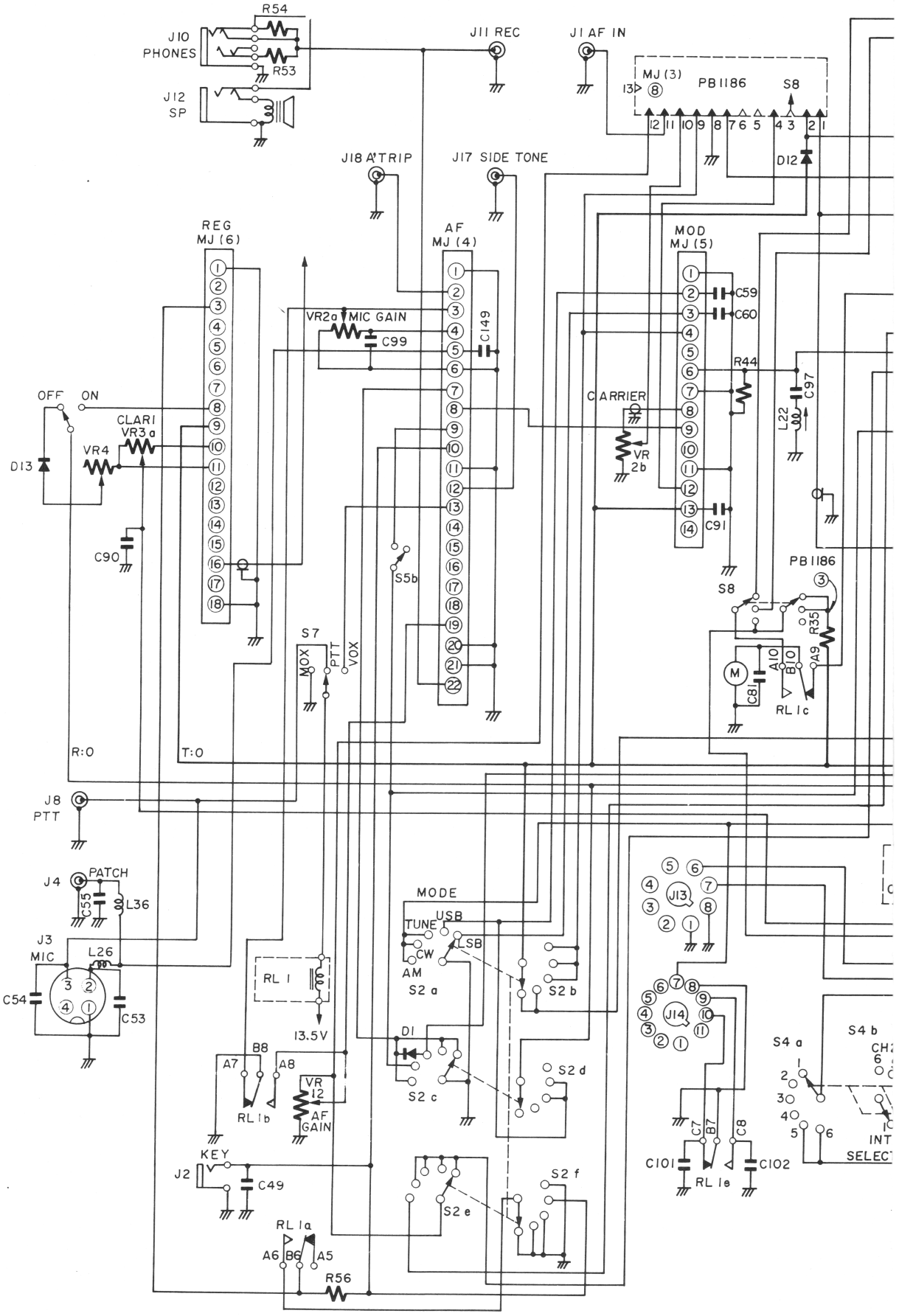

MODE
S2 (A~F)
T:0
MJ(5)-11
ACC
J14 PIN 7
S2 A
S2 B
MODE
TUNE
USB
LSB
CW
AM
S2 (A~F)
R:0
S2 D
MJ(3)-12
DI 1S1934
S2 C
MJ(6)-3
S2 F
S2 E
L27
250μH
AF GAIN
5K A
RL1 (A6)
RL1 (A8)
AF IN
J1
J2
KEY
T14
IN 20mA
VR1
MIC
J3
PATCH
J4
R52 100
C53 100P
C55 100P
C54 10U
MJ(3)
I F
MJ(4)
AF
MJ(5)
MOD & OSC
RL1 (A9)
L26
250μH
C97
30P
28.6MHz
C100
0.047μ
1K
C
RF GAIN
L23
250μH
MJ(1)-10
C94 0.047μ
C52
0.047μ
L22
R:0
VR7
5K
+6V REG
C99
100P
MIC GAIN
5K
C93
0.0047u
C56
0.047μ
S4A
S4 B
C59
C60
0.047μ
C61
0.047μ
*R44
4.7K
C62
0.01μ
5K
R23 56K
R24 56K
CARRIER
VR2
ALC
S2 (A3.4.5)
T:0
S8 (ALC)
C91
0.047μ
R22 330
+9V
L20 250μH
R34
5.6K
L21
250μH
D11
1S1007
R18
470
C57 100u
16WV
R21 100
C58 0.047
C27 47μ
470u 16WV
PB-1078A
MJ(2)
PTT
MOX
VOX
S7
J8
L16 250uH
S2C3
C50 0.047μ
R19 5.6K
R20 5.6K
D8 1S1007
C51 0.01μ
C95 0.047μ
MJ(1)-9
AGC
L17
250uH
N.B
ON
S3
OFF
F OUT
J7
C96
0.047μ
+6V REG
T:0
PB-1080A
PB-1081B
P9
DC
P9
AC
J9
POWER
S5
HEATER
J14 ACC PIN2
V1
C70
0.047μ
J15
FAN
F1
AC 100V. 110V. 117V ---5A
200V. 220V. 234V ---3A
117V
110
100
0
C74 0.001μ
AL
1.4KV AC
C75 0.01μ
AL
1.4KV DC
FUSE
F1
S6
POWER
BLACK
RED
+ 13.5V
R3 47Ω 10W
R4 470Ω 2W
T
1.5V
1.5
12.6V
10.5
9.5
AC 10.5V
Q1
Q2
EM
C76 2.2μ
160WV
T11 PT
DC 13.5V
Q1~Q2 DTG-110B
120V
240V
240
AC 480V
600V REC
PB-1076 E
AC 120V
DC 160V
DC 100V
R28 47K 1W
R29 47K 1W
C77 100u
C78 100u
+600V
+500WV
+300V
T12
+13.6V
+13.5V
20mH 0.5A
C103 0.047μ
PL1
15V (SWAN)
MAIN DIAL
PL3
14V
C124
SUB DIAL
PHONES
J10
S P
J12
AUX
J11
INT SP
SP1
RL1
(ABC 5678910)
S2 (F1)
MJ(4)-17
A6
B6
NC
A5
A8
B8
A7
A10
C6
B5
C5
C8
B7
C7
C10
T:0
R:0
J14(9)
J14(10)
S4 D (10)
6V REG
ACC

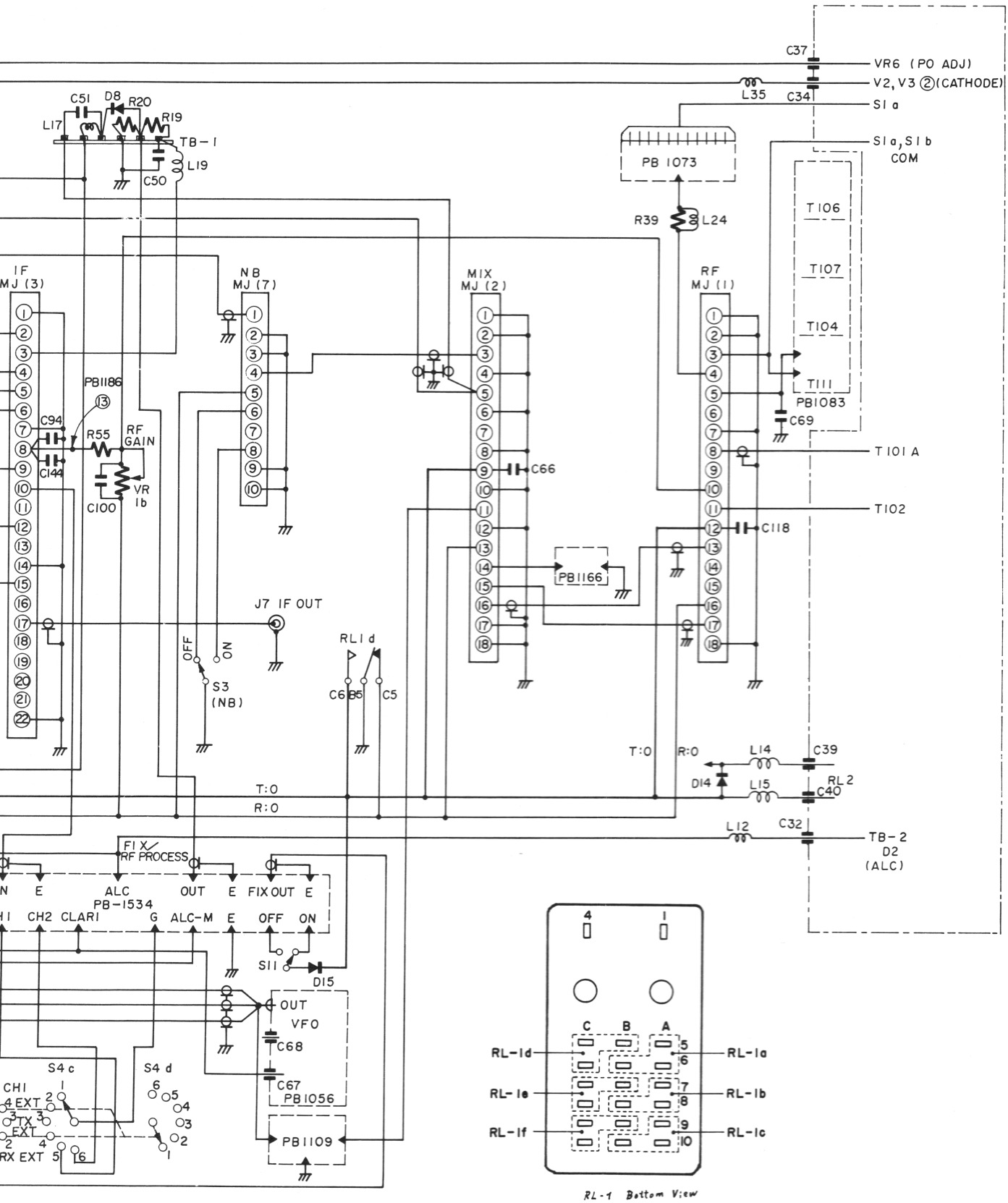

PRESELECT
V1 12BY7A
V2 6JS6A
V3 6JS6A
PB-1086A COIL(B)
PB-1092 TRIMMER(B)
PB-1075B TRIMMER(A)
PB-1083 (T104. T106. T107. T111) COIL(A)
PB-1116
PB-1060A FIX
PB-1056 VFO
PB-1107
PB-1109
PB-1077A
PB-1084A MIXER
PB-1082B MIX & VOX
PB-1086A
PB-1079A REG & CALIB
PB-1074A RF TRIMMER
PB-1073A X TAL HOLDER
MJ(1) RF
MJ(6)
SELECT S4(A~D)
CH 2
CH 1
EXT
TX.EXT
RX.EXT
INT
BAND S1 (A~M)
S1 A
S1 B
S1 C
S1 D
S1 G
S1 H
S1 J
S1 K
S1 L
S1 M
S10 RFATT
OFF
ANT
GND
LOADING
CLARIFIER
VR4 1KB
CLARI ØSET
ON
OFF
25KHz
100KHz
S9
M1 METER
15V SWAN PL2
EXT VFO
ACC
-100V
+600V
+300V
+150V
12BY7A BIAS (-20V)
S2 FO
V2.V3 (BIAS)
+13.5V
+6V REG
T:0
R:0
P.O
I.C
ALC
RF
NC
HSW
H
S2 A (5.4.5.)
RL1 (C8)
RL1 (C7)
RL2
TRAP 6.36MHz
DIODE SW
MIC
PRESELECT
NEUT C125 100P 1KWV
TC27 1.5KV 10P MAX
TC 6.7.10 100P MAX
C9 270P
C10 50P
C16 10P
J5 RF OUT
METER SHUNT R12
C23 1000P 1.5KWV
C24 0.0047μ 1.4KV DC
C25 150P TV AC 3KV
C28 5P
C123 2P
C126 5P
C127 0.001
C129 0.001
C130 0.001
C131 0.001
C132 0.001
C133 0.001
C134 0.001
C135 0.001
C136 0.001
C137 0.001
C138 0.001
C139 0.001
C140 0.001
C141 0.001
C142 0.001
C143 0.001
C144 0.001
C145 0.001
C146 0.001
C147 0.001
C148 0.001

PRESELECT
C134 3P
500WV
C2 470P
500WV
S1m
R3 47K
1/2W
C3 .001
500WV
R4 56 1/2W
L1
C135 60P
L33
PB-1187
V1 12BY7A
DRIVE
C123 2P
3.9
C8 .0047
500WV
MJ16-4
T-102
T-107 5MHz TRAP
C100
PB-1083
S1f PB-1083
T-106
R2 3.3 K 1/2W
R5 5.1K 3W
R37 18K 5W
S1g
C147 500P
S1i
C137 1000P
L37
V2W
R69 56
TC6
C9 200P
TC7
C105 30P
TC8
C10 500P
TC9
C107 30P
TC10
C130 680P
TC6. 100P
TC7~TC9 40P
TC10 420P
C13 60P 1KWV
R36 33K 1/2W
T-103
T-105A
S1h
PB-1092
R6 2.2K
L2 1mH
C11 200P 1KWV
C109 2.2 450WV
R8 10K R7 1K
S1e
TC1
C4 250P
TC2
C5 50P
TC3
C6 50P
TC4
TC5
TC28
C129 820P
TC1~TC4 50P
TC5 10P
TC28 420P
PB-1187A
R51 100 1/2W
C7 0.001
PB-1181B
12BY7A
C76 0.047
J9-12
C30 1000P
L11 250μH
C110 1000P
C31 1000P
C85
+300V
R40 1.5K 5W
MJ16-2
(PB-1188 RF TRIMMER)
BAND
S1a
S1b
10A
10B
10C
10D
JJY
160
80
40
20
15
11
TC11
TC12
TC13
TC14
TC15
TC16
TC17
TC18
TC19
TC20
TC21
TC22
TC23
TC24
C47 50P
C46 150P
C45 300P
R63 1K 1/4W
C44 250P
C43 100P
R71 820
TC10
TC17
TC6
TC26
TC25
TC11~TC25 50P(MAX)
TC29
TC26 } 420P(MAX)
PB-1083
T-111
C89 .0047
R39 56 1/2W
L24
PB-1073B
+13.5V
PB-1083

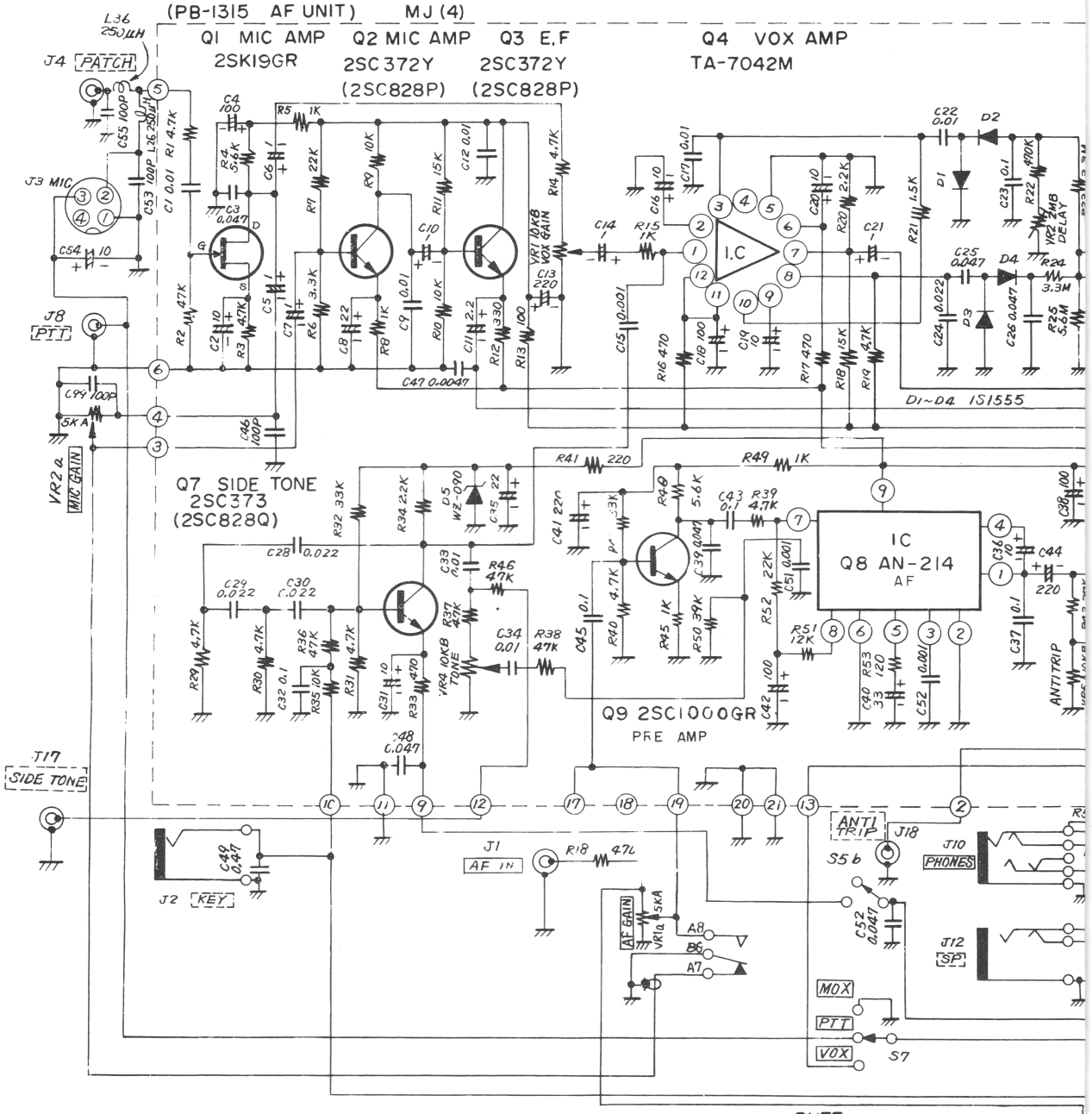


MAIN CHASSIS:
FINAL AND DRIVER DETAIL


R54
J10 PHONES
R53
J12 SP
J11 REC
J1 AF IN
MJ (3)
PB1186
S8
J18 A'TRIP
J17 SIDE TONE
D12
REG MJ (6)
AF MJ (4)
MOD MJ (5)
VR2a MIC GAIN
C99
C149
C59
C60
R44
C97
L22
CARRIER
VR 2b
C91
OFF ON
CLARI VR3a
VR4
D13
C90
S5b
S7
MOX
PTT
VOX
R35
A10
B10
A9
C81
RL 1c
R:0
T:0
J8 PTT
J4 PATCH
C55
L36
J3 MIC
L26
C54
C53
RL 1
13.5V
MODE
TUNE
USB
CW
LSB
AM
S2 a
S2 b
D1
S2 c
S2 d
B8
A7
A8
RL 1b
VR 12 AF GAIN
KEY
J2
C49
S2 e
S2 f
RL 1a
A6
B6
A5
R56
J13
J14
S4 a
S4 b
C7
B7
C8
C101
C102
RL 1e
INT
SELEC



MAIN CHASSIS:
SIGNAL AND CONTROL WIRING

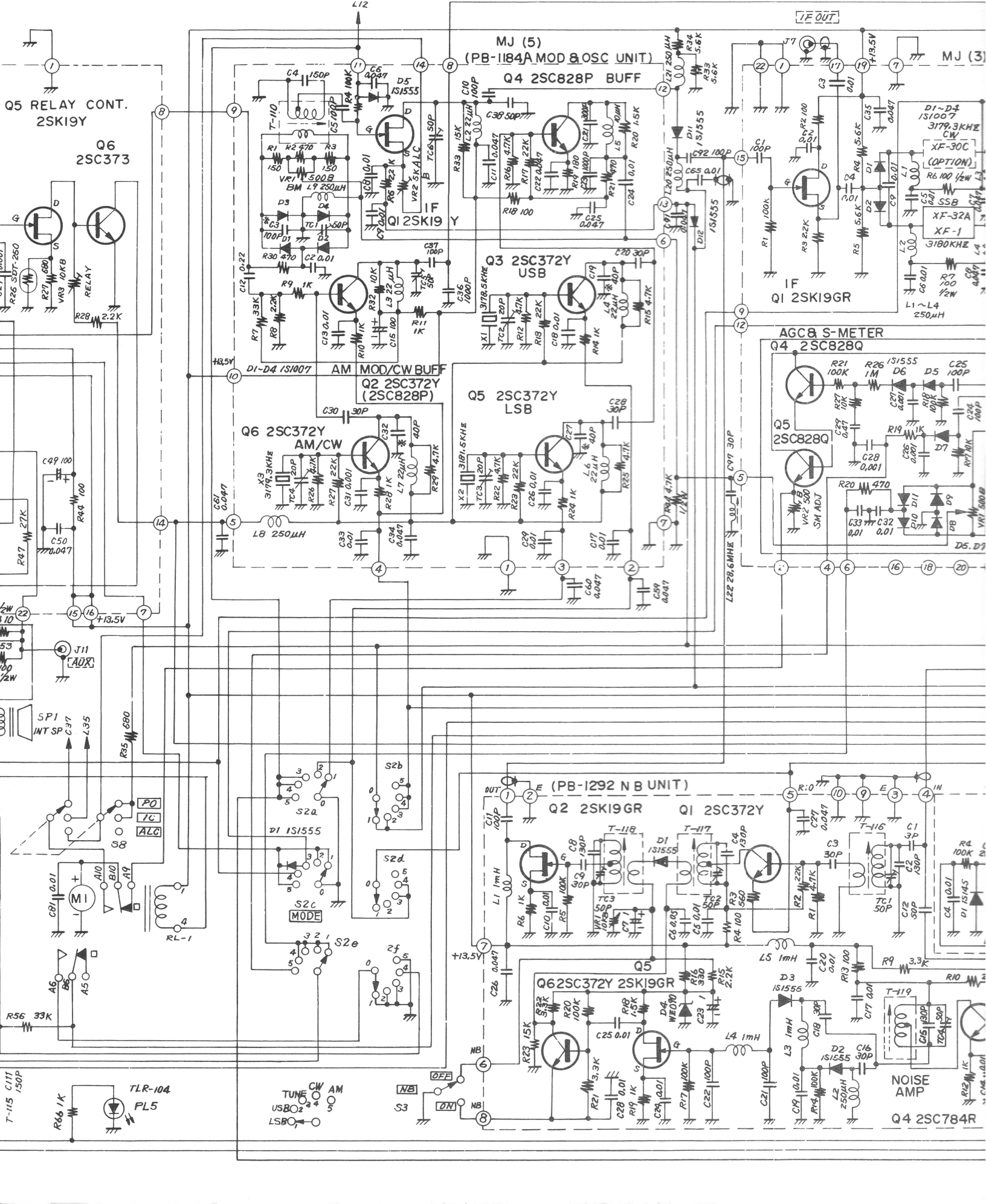


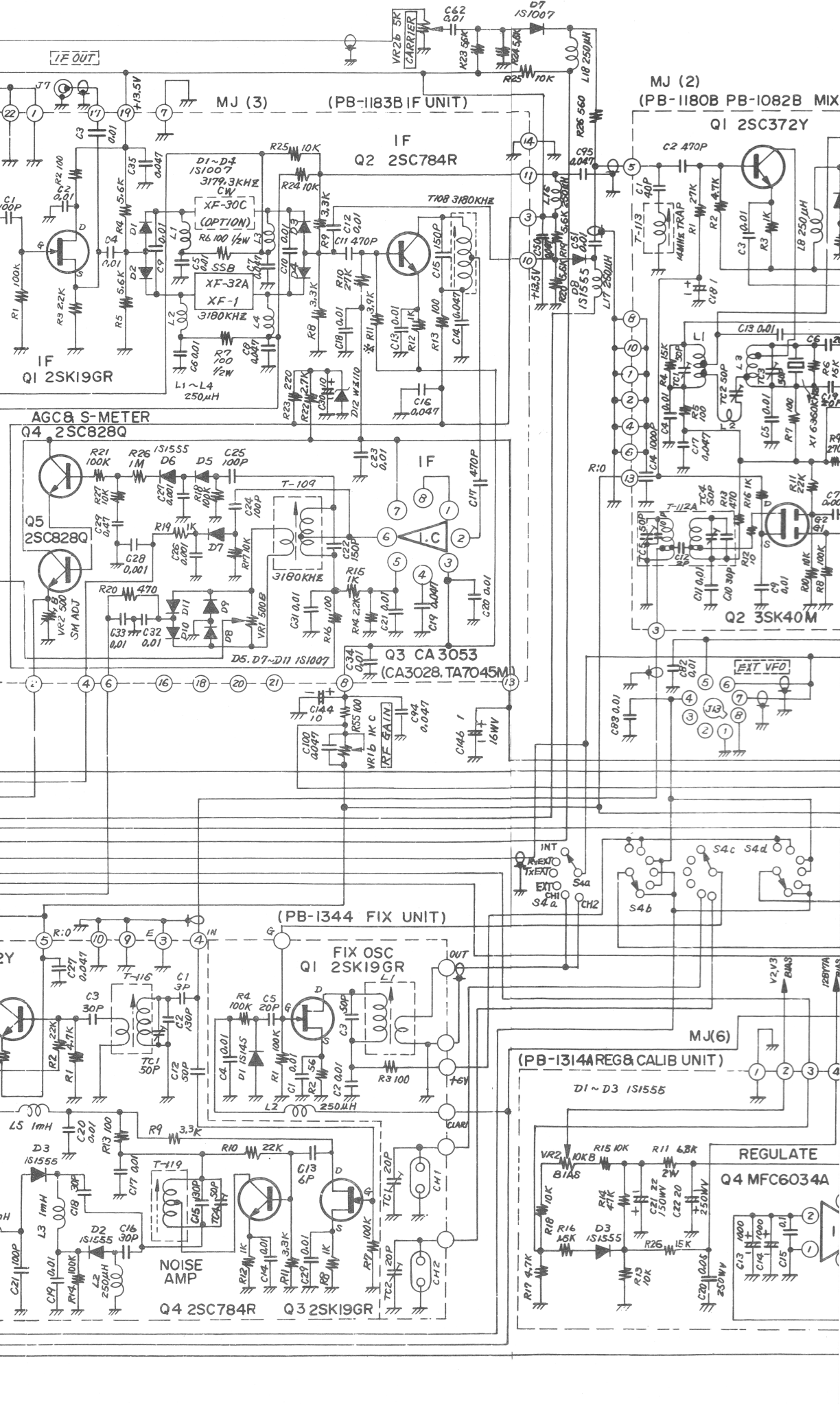
NOTES

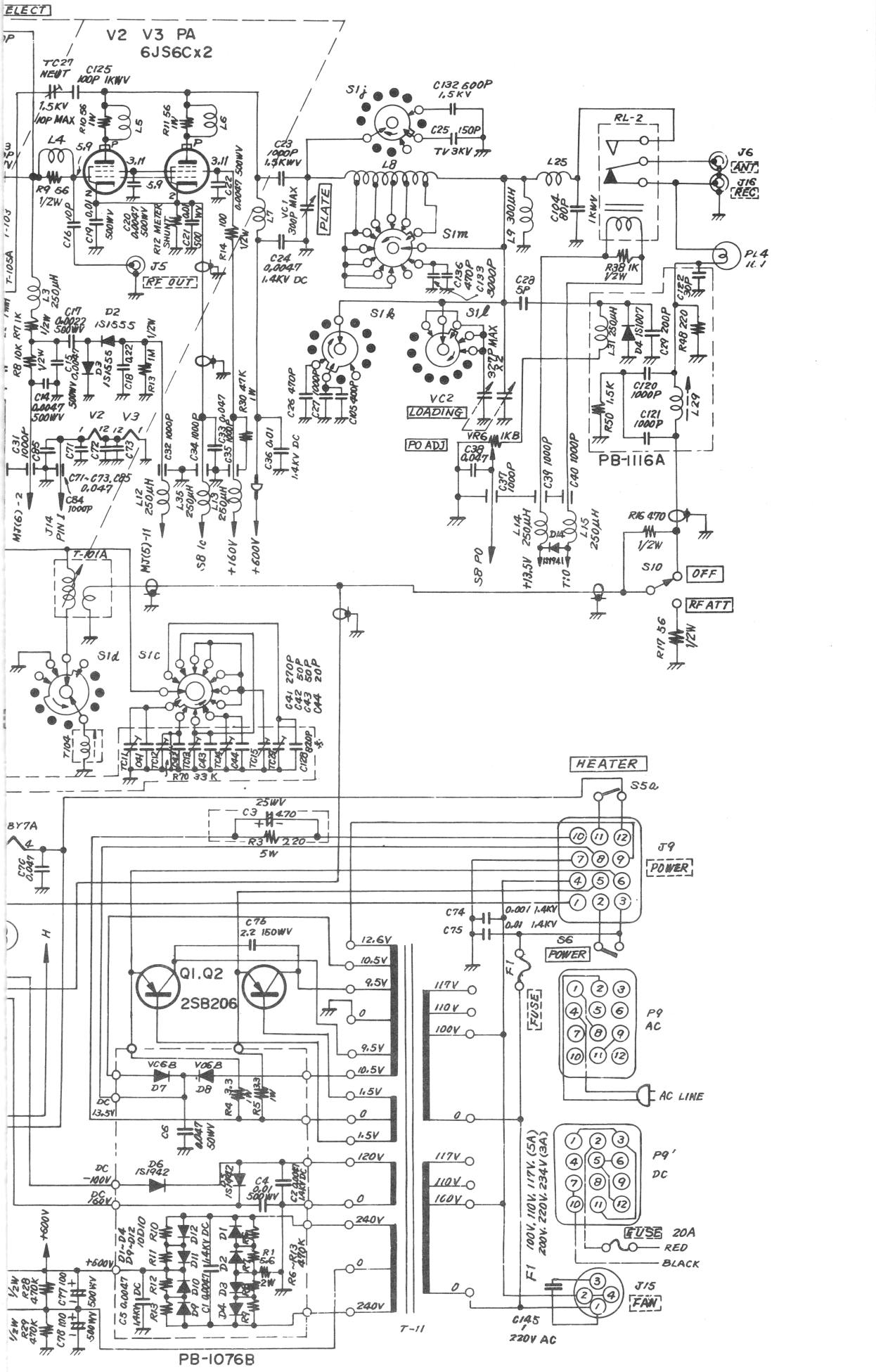
1. ALL RESISTORS ARE IN 1/4W UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS ARE IN uF UNLESS OTHRWISE NOTED.
3. ALL ELECTROLYTIC CAPACITORS ARE 16WV UNLESS OTHRWISE NOTED.
4. ※ VALUE IS NOMINAL.

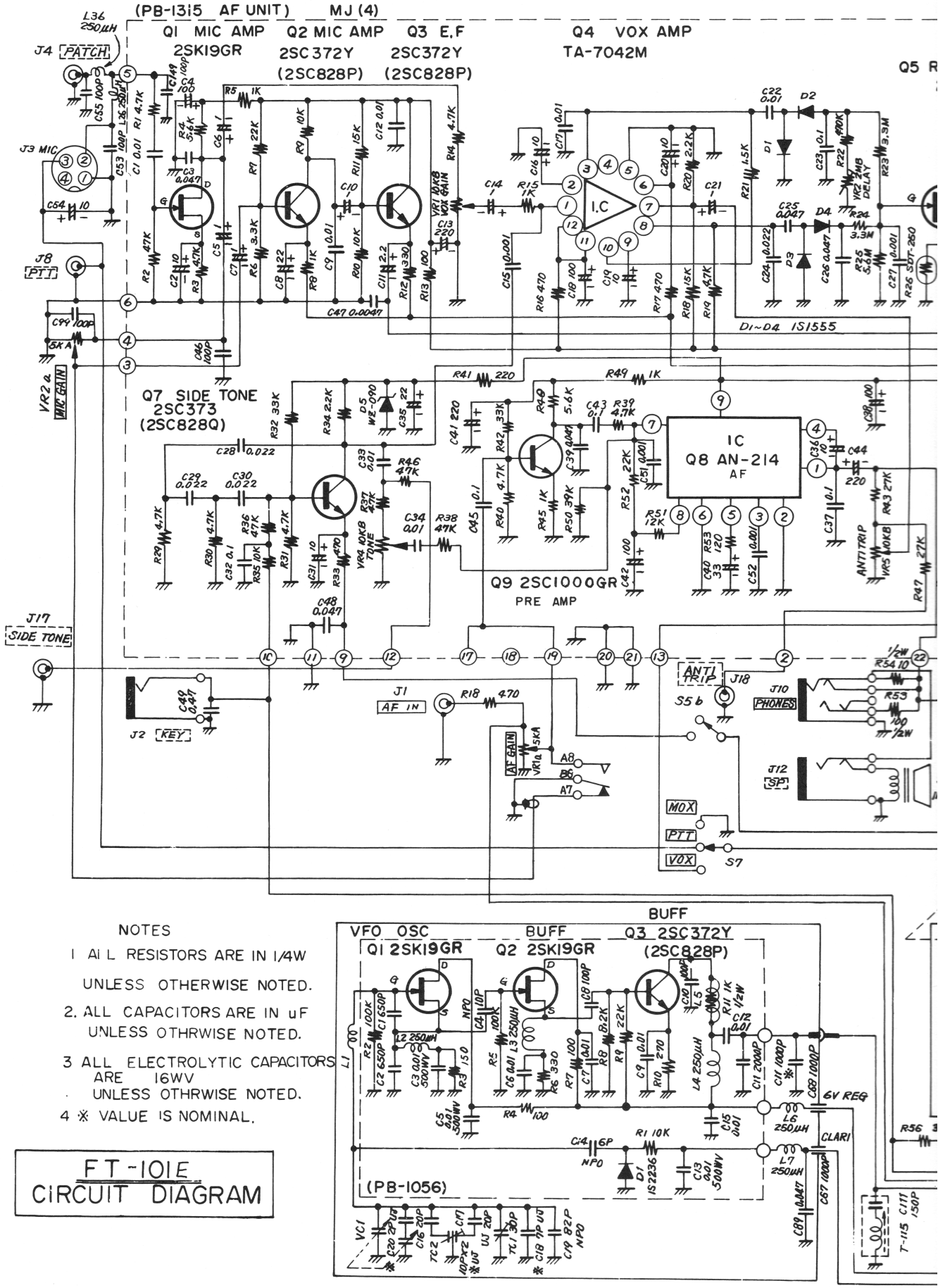
FT 101B2
CIRCUIT DIAGRAM

06001


MJ (5)
(PB-1184A MOD & OSC UNIT)
Q4 2SC828P BUFF
Q5 RELAY CONT.
2SK19Y
Q6
2SC373
IF
Q1 2SK19Y
Q3 2SC372Y
USB
IF
Q1 2SK19GR
IF OUT
MJ (3)
AGC & S-METER
Q4 2SC828Q
Q5
2SC828Q
AM MOD/CW BUFF
Q2 2SC372Y
(2SC828P)
Q5 2SC372Y
LSB
Q6 2SC372Y
AM/CW
(PB-1292 N B UNIT)
Q2 2SK19GR
Q1 2SC372Y
Q5
Q6 2SC372Y 2SK19GR
NOISE
AMP
Q4 2SC784R
AUX
INT SP
TLR-104
PL5
RL-1
S8
S2a
S2b
S2c
MODE
S2d
S2e
S3
TUNE
CW
AM
USB
LSB
NB
OFF
ON
XF-30C
(OPTION)
SSB
XF-32A
XF-1
3180KHz
3179.3KHz
CW
+13.5V


IF OUT
MJ (3)
(PB-1183B IF UNIT)
IF
Q2 2SC784R
IF
Q1 2SK19GR
AGC & S-METER
Q4 2SC828Q
Q5
2SC828Q
D1~D4
1S1007
3179.3KHZ
CW
XF-30C
(OPTION)
SSB
XF-32A
XF-1
3180KHZ
L1~L4
250μH
T108 3180KHZ
T-109
3180KHZ
D5. D7~D11 1S1007
Q3 CA3053
(CA3028. TA7045M)
IF
MJ (2)
(PB-1180B PB-1082B MIX
Q1 2SC372Y
Q2 3SK40M
EXT VFO
INT
EXT
CH1
CH2
S4a
S4b
S4c S4d
(PB-1344 FIX UNIT)
FIX OSC
Q1 2SK19GR
NOISE
AMP
Q4 2SC784R
Q3 2SK19GR
MJ(6)
(PB-1314A REG & CALIB UNIT)
D1~D3 1S1555
REGULATE
Q4 MFC6034A


V2 V3 PA
6JS6Cx2
PB-1116A
PB-1076B
Q1.Q2
2SB206
HEATER
POWER
FUSE
FAN
RF ATT
OFF
LOADING
PLATE
RF OUT
ANT
REC
AC LINE
RED
BLACK
220V AC
100V, 110V, 117V, (5A)
200V, 220V, 234V (3A)
FUSE 20A



NOTES

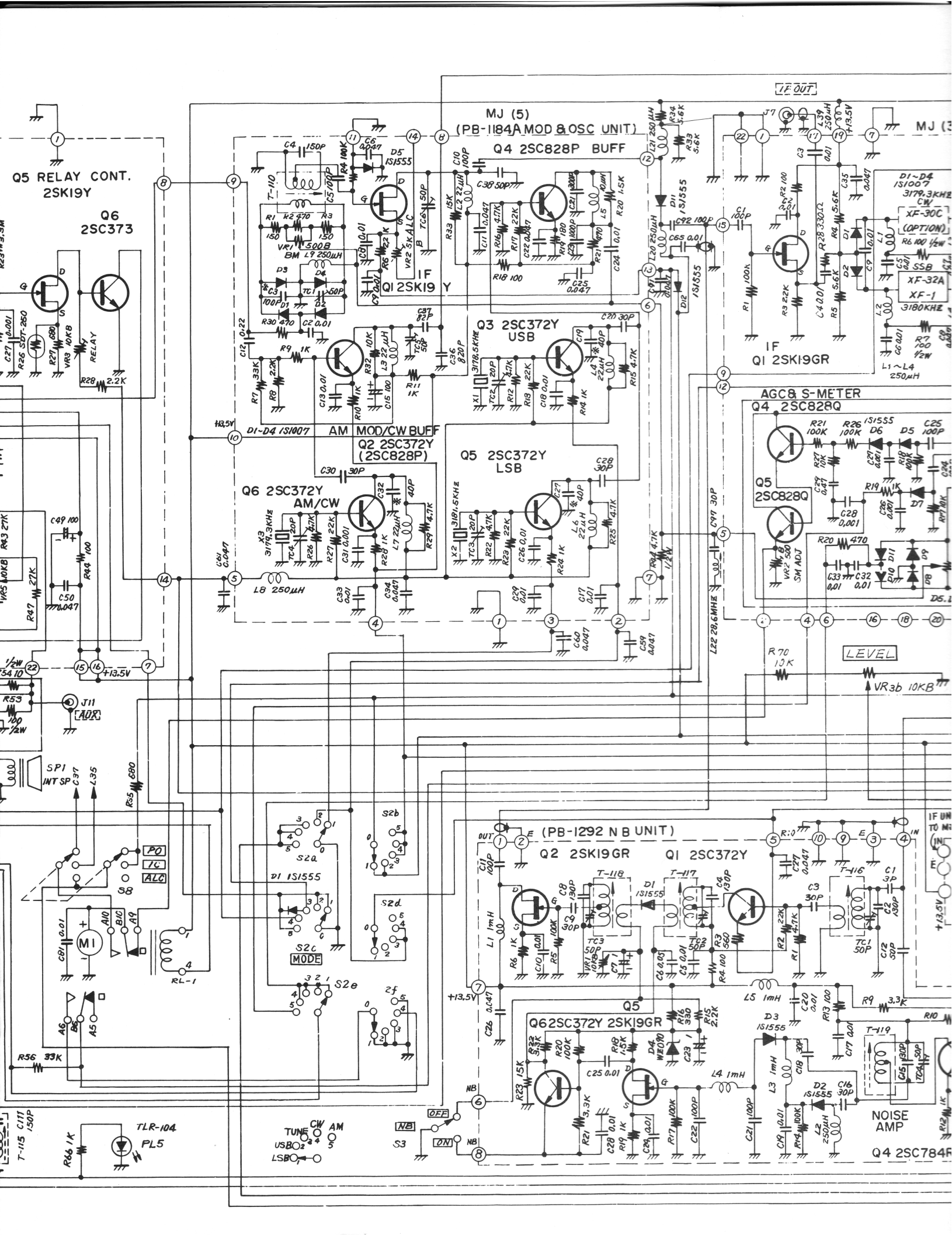
1 ALL RESISTORS ARE IN 1/4W UNLESS OTHERWISE NOTED.

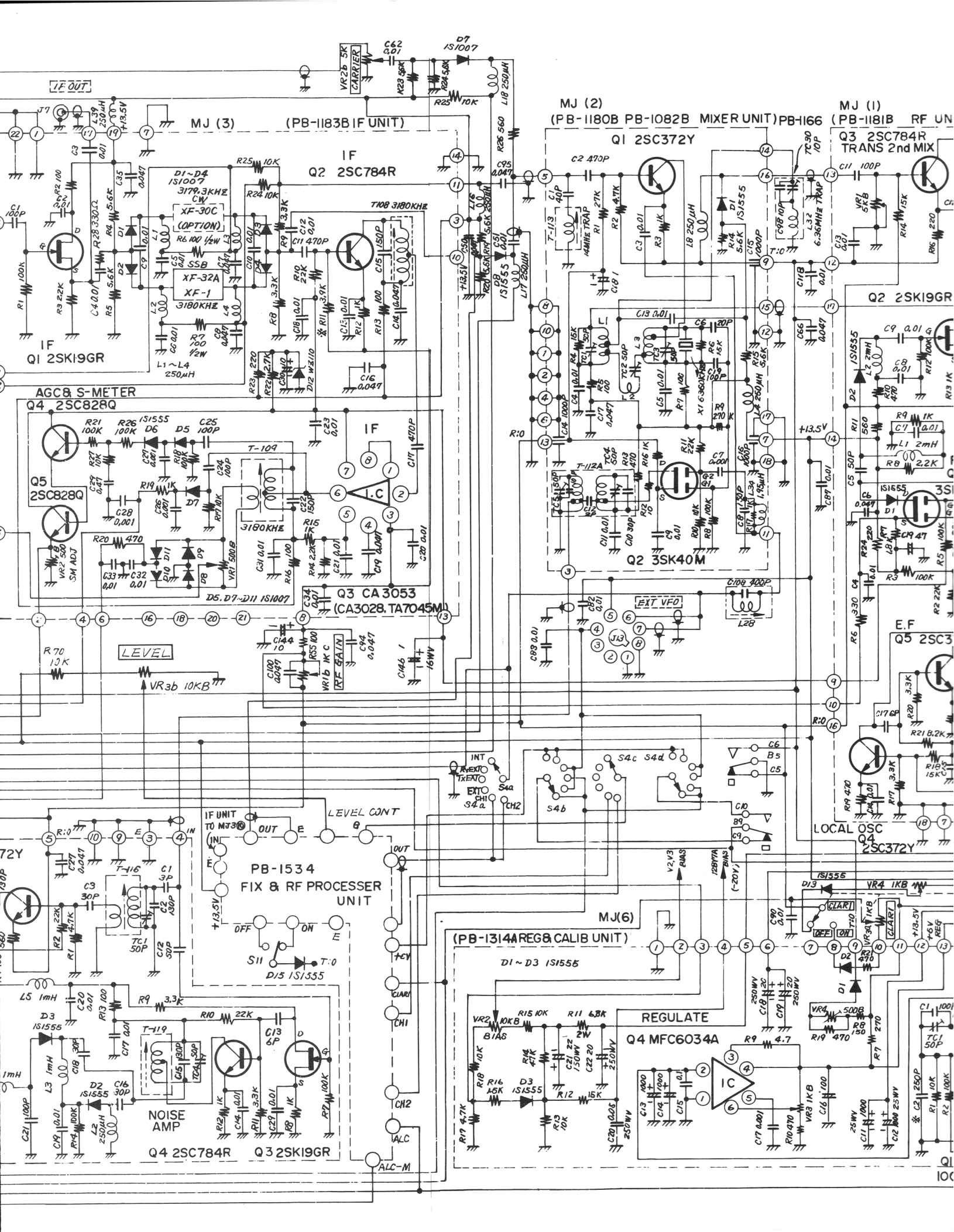
2. ALL CAPACITORS ARE IN uF UNLESS OTHRWISE NOTED.

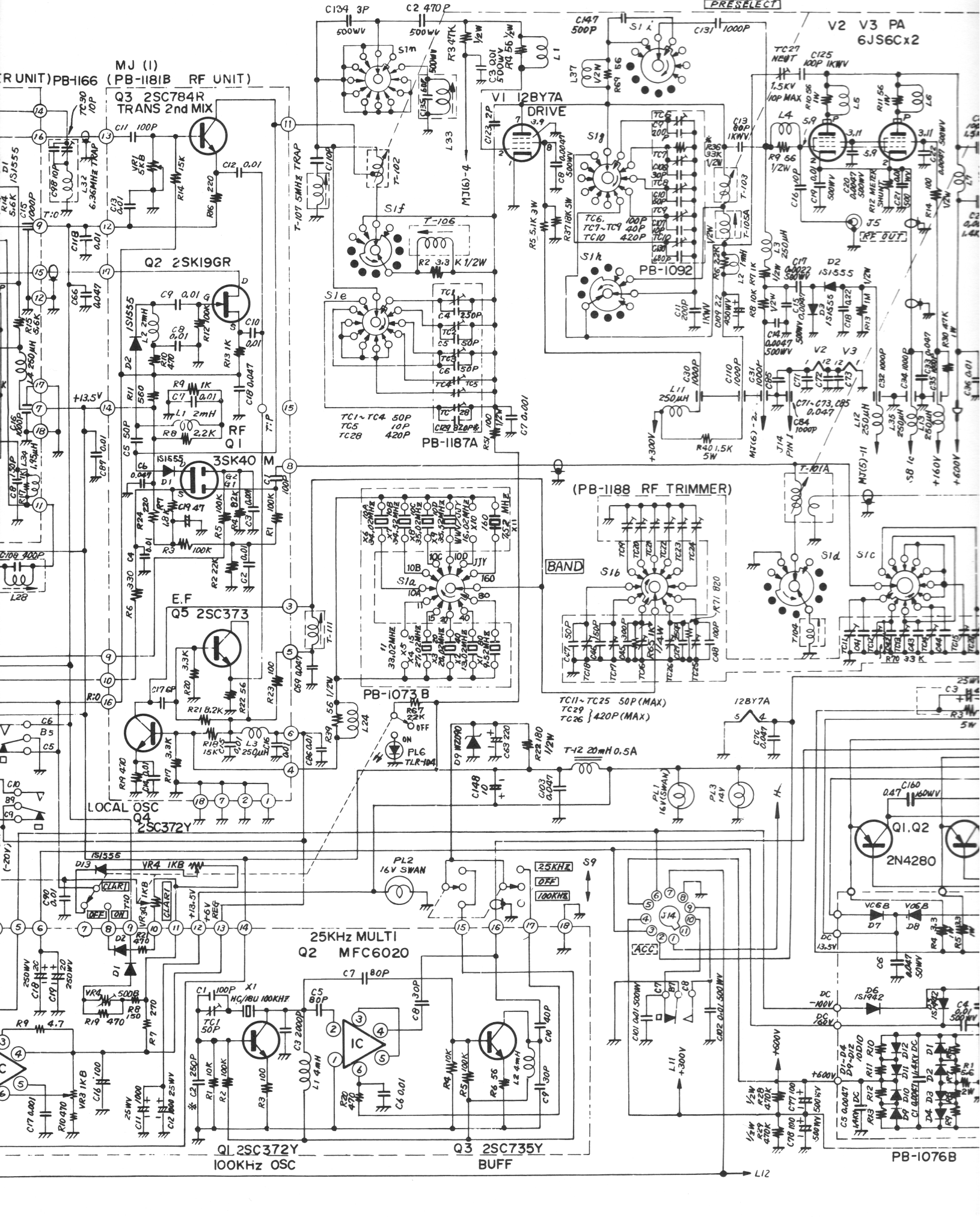
3 ALL ELECTROLYTIC CAPACITORS ARE 16WV UNLESS OTHRWISE NOTED.

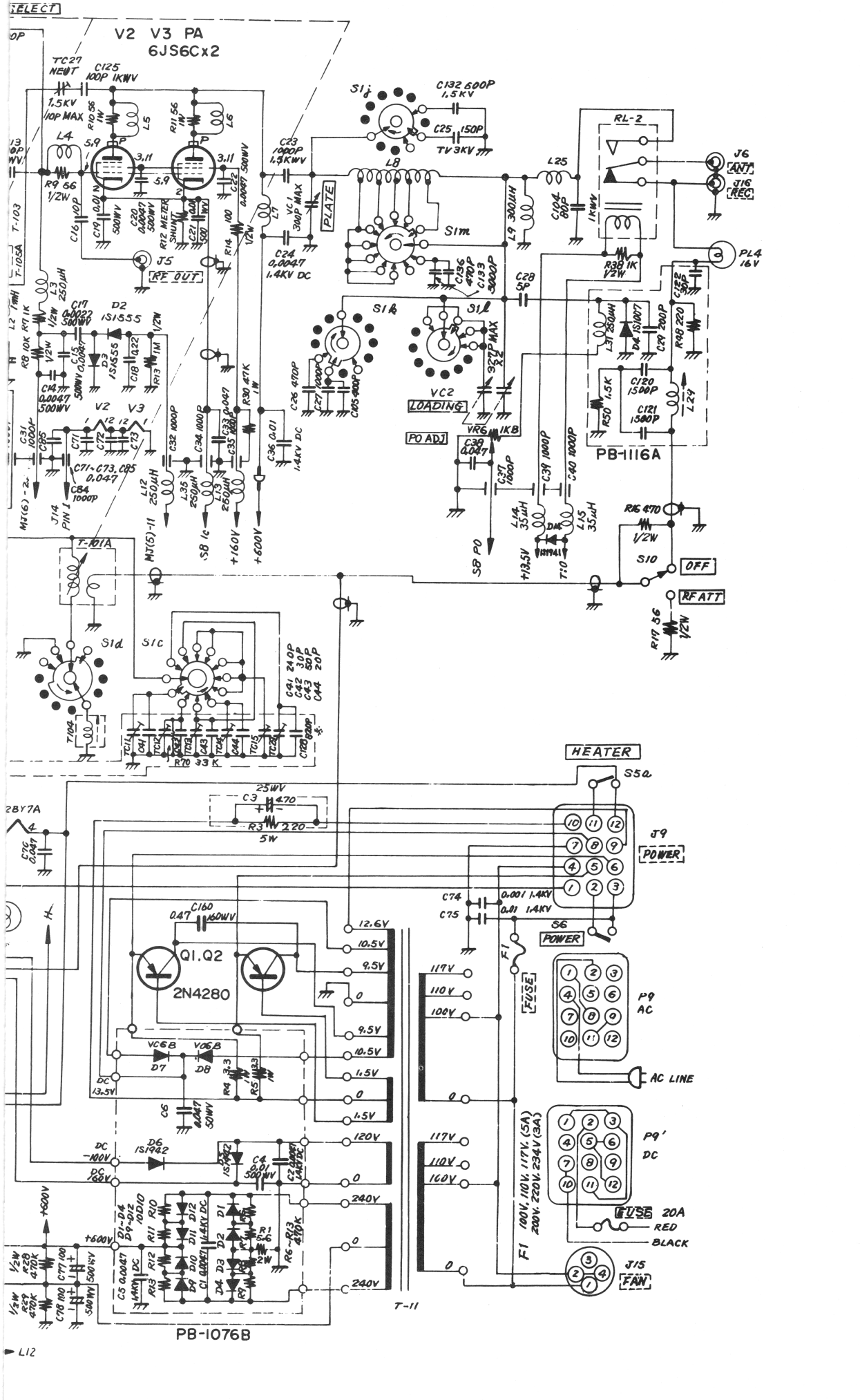
4 ※ VALUE IS NOMINAL.

FT-101E
CIRCUIT DIAGRAM


MJ (5)
(PB-1184A MOD & OSC UNIT)
Q4 2SC828P BUFF
Q5 RELAY CONT.
2SK19Y
Q6
2SC373
IF
Q1 2SK19Y
Q3 2SC372Y
USB
Q2 2SC372Y
(2SC828P)
AM MOD/CW BUFF
Q6 2SC372Y
AM/CW
Q5 2SC372Y
LSB
IF OUT
IF
Q1 2SK19GR
AGC & S-METER
Q4 2SC828Q
Q5
2SC828Q
LEVEL
VR3b 10KB
(PB-1292 N B UNIT)
Q2 2SK19GR
Q1 2SC372Y
Q5
Q6 2SC372Y 2SK19GR
NOISE
AMP
Q4 2SC784R
SP1
INT SP
S8
MODE
S3
TLR-104
PL5
J11
AUX
RL-1
M1


MJ (3) (PB-1183B IF UNIT)
IF OUT
IF
Q1 2SK19GR
Q2 2SC784R
T108 3180KHz
XF-30C
(OPTION)
SSB
XF-32A
XF-1
3180KHz
D1~D4 IS1007
AGC& S-METER
Q4 2SC828Q
Q5 2SC828Q
T-109
D5 D7~D11 IS1007
Q3 CA3053
(CA3028. TA7045M)
LEVEL
VR3b 10KB
VR1b 1K C
RF GAIN
MJ (2)
(PB-1180B PB-1082B MIXER UNIT)
Q1 2SC372Y
Q2 3SK40M
EXT VFO
MJ (1)
(PB-1181B RF UN
Q3 2SC784R
TRANS 2nd MIX
Q2 2SK19GR
LOCAL OSC
Q4 2SC372Y
E.F
Q5 2SC3
PB-1534
FIX & RF PROCESSER
UNIT
IF UNIT
TO MJ3
LEVEL CONT
INT
EXT
CH1
CH2
S4a
S4b
S4c
S4d
MJ(6)
(PB-1314A REG& CALIB UNIT)
D1~D3 IS1555
REGULATE
Q4 MFC6034A
BIAS
NOISE
AMP
Q4 2SC784R
Q3 2SK19GR
ALC
ALC-M
+13.5V
+6V REG
CLART
V2,V3 BIAS
12BY7A BIAS (-20V)


MJ (1)
(PB-1181B RF UNIT)
Q3 2SC784R
TRANS 2nd MIX
Q2 2SK19GR
RF
Q1
3SK40
E.F
Q5 2SC373
LOCAL OSC
Q4
2SC372Y
V1 12BY7A
DRIVE
PB-1092
PB-1187A
PB-1188 RF TRIMMER
PB-1073B
V2 V3 PA
6JS6Cx2
PRESELECT
BAND
25KHz MULTI
Q2 MFC6020
Q1 2SC372Y
100KHz OSC
Q3 2SC735Y
BUFF
Q1,Q2
2N4280
PB-1076B
+13.5V
+300V
+600V
+160V
+6V REG
ACC
PL1 16V(SWAN)
PL2 16V SWAN
PL3 14V
PL6 TLR-104
12BY7A
T-12 20mH 0.5A
25KHz
OFF
100KHz
CLAR
DFF
ON


SELECT
V2 V3 PA
6JS6Cx2
TC27 NEUT
C125 100P 1KWV
1.5KV
110P MAX
L4
L5
L6
R10 56 1W
R11 56 1W
R9 56 1/2W
C16 .01
C19 .01
C20 .0047 500WV
C21 .0047 500WV
R12 METER SHUNT
C22 .0047 500WV
R14 100 1/2W
J5
RF OUT
C23 1000P 1.5KWV
L7
VC1 300P MAX
C24 .0047 1.4KV DC
PLATE
S1j
C132 600P 1.5KV
C25 150P TV 3KV
L8
S1m
C136 470P
C133 3000P
L9 300UH
L25
C104 80P 1KWV
RL-2
J6 ANT
J16 REC
PL4 16V
R38 1K 1/2W
C28
C128 35P
S1k
S1l
C26 470P
C27 1000P
C105 400P
VC2 LOADING
327P MAX
VR6 1KB
PO ADJ
C39 .047
C37 1000P
C38 1000P
L14 35UH
L15 35UH
DM1
1N914
T-10
+13.5V
SB PO
L37 280UH
D4 1S1007
C129 200P
R48 220
C120 1500P
C121 1500P
R50 1.5K
L29
PB-1116A
R16 470 1/2W
S10
OFF
RF ATT
R17 56 1/2W
L3 250UH
R8 10K
R7 1K
C17 .0022 500WV
D2 1S1555
C15 .0047 500WV
D3 1S1555
C18 .022
R13 1M 1/2W
C14 .0047 500WV
V2 V3
C31 1000P
C85
C71
C72
C73
C84 1000P
C71-C73, C85 .047
J14 PIN 1
MT(6)-2
MT(5)-11
L12 250UH
C32 1000P
C34 1000P
L35 250UH
L13 250UH
C33 .0047
C35 1000P
R30 47K 1W
C36 .01 1.4KV DC
SB 1c
+160V
+600V
T-101A
S1d
S1c
C41 240P
C42 30P
C43 50P
C44 20P
C120 220P
R70 33K
T104
HEATER
S5a
J9 POWER
25WV
C3 470
R3 220 5W
2BY7A
C76 .047
C74 0.001 1.4KV
C75 .01 1.4KV
S6 POWER
F1 FUSE
C160 .047 150WV
Q1.Q2
2N4280
12.6V
10.5V
9.5V
0
9.5V
10.5V
1.5V
0
1.5V
120V
0
240V
0
240V
VC6B
D7
D8
R4 3.3
R5 33
DC 13.5V
C6 .047 50WV
DC -100V
D6 1S1942
C4 .01 500WV
DC -60V
+600V
D1-D4 D9-D12 1D10
R11 R10
D12 D11 D10 D9
1.4KV DC
D1 D2 D3 D4
R1 5.6 2W
R2
R6-R13 470K
C5 .0047 1.4KV DC
R12 R3
C1 .0047
R9
C77 100 500WV
C78 100 500WV
R28 470K 1/2W
R29 470K 1/2W
T-11
PB-1076B
117V
110V
100V
0
117V
110V
100V
0
117V
110V
100V
0
F1 100V, 110V, 117V. (5A) 200V, 220V, 234V (3A)
P9 AC
AC LINE
P9' DC
FUSE 20A
RED
BLACK
J15 FAN
L12